

TECHNICAL & SERVICE MANUAL

R407C

Outdoor unit
[model names]

PUH-P1.6VGAA

PUH-P2VGAA

PUH-P2.5VGAA

PUH-P3VGAA

PUH-P3YGAA

PUH-P4YGAA

PUH-P5YGAA

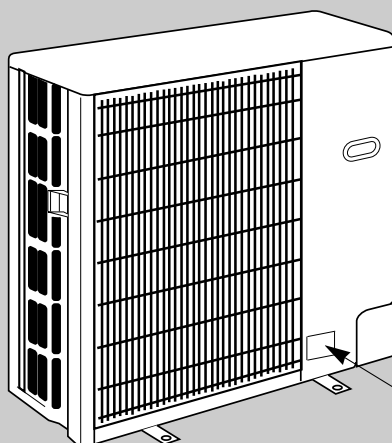
PUH-P6YGAA

[Service Ref.]

PUH-P1.6VGAA
PUH-P2VGAA
PUH-P2.5VGAA
PUH-P3VGAA
PUH-P3YGAA
PUH-P4YGAA
PUH-P5YGAA
PUH-P6YGAA
PUH-P5YGAA₁
PUH-P6YGAA₁
Revision :

- PUH-P5YGAA₁ and PUH-P6YGAA₁ are added in REVISED EDITION-A.
- "1. TECHNICAL CHANGES" has been added to REVISED EDITION-A.
- CAPILLARY TUBE and BYPASS VALVE are added in "13. PARTS LIST".

• Please void OC285.



Model name
indication

PUH-P2VGAA
PUH-P2.5VGAA
PUH-P3VGAA
PUH-P3YGAA

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PUH-P5YGAA —→ **PUH-P5YGAA₁**

PUH-P6YGAA —→ **PUH-P6YGAA₁**

BYPASS BALVE SOLENOID COIL has been added.

CAUTIONS RELATED TO NEW REFRIGERANT

Cautions for units utilizing refrigerant R407C

Do not use the existing refrigerant piping.

The old refrigerant and lubricant in the existing piping contains a large amount of chlorine which may cause the lubricant deterioration of the new unit.

Use "low residual oil piping"

If there is a large amount of residual oil (hydraulic oil, etc.) inside the piping and joints, deterioration of the lubricant will result.

**Store the piping to be used during installation indoors with keep both ends sealed until just before brazing.
(Store elbows and other joints in a plastic bag.)**

If dust, dirt, or water enters the refrigerant cycle, deterioration of the oil and compressor trouble may result.

Use ESTR , ETHER or HAB as the lubricant to coat flares and flange connection parts.

If large amount of mineral oil enter, that can cause deterioration of refrigerant oil etc.

Use liquid refrigerant to charge the system.

If gas refrigerant is used to seal the system, the composition of the refrigerant in the cylinder will change and performance may drop.

Do not use a refrigerant other than R407C.

If another refrigerant (R22, etc.) is used, the chlorine in the refrigerant may cause the lubricant deterioration.

Use a vacuum pump with a reverse flow check valve.

The vacuum pump oil may flow back into the refrigerant cycle and cause the lubricant deterioration.

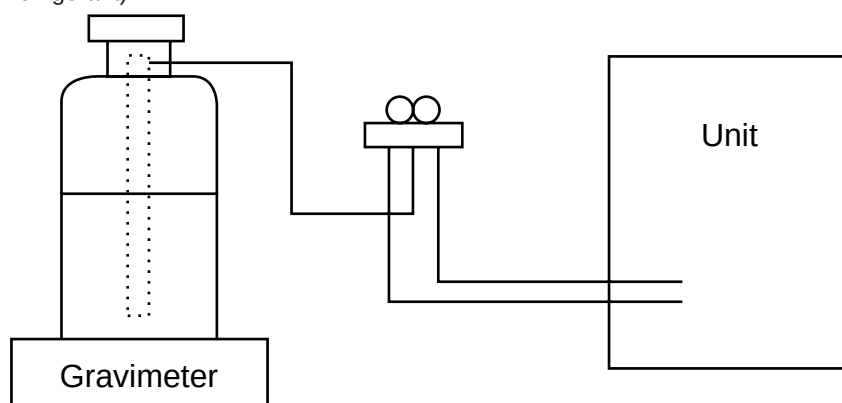
Ventilate the room if refrigerant leaks during operation. If refrigerant comes into contact with a flame, poisonous gases will be released.

[1] Cautions for service

- After recovering the all refrigerant in the unit, proceed to working.
- Do not release refrigerant in the air.
- After completing the repair service, recharge the cycle with the specified amount of liquid refrigerant.

[2] Refrigerant recharging**(1) Refrigerant recharging process****①Direct charging from the cylinder.**

- R407C cylinder are available on the market has a syphon pipe.
 - Leave the syphon pipe cylinder standing and recharge it.
- (By liquid refrigerant)

**(2) Recharge in refrigerant leakage case**

- After recovering the all refrigerant in the unit, proceed to working.
- Do not release the refrigerant in the air.
- After completing the repair service, recharge the cycle with the specified amount of liquid refrigerant.

[3] Service tools

Use the below service tools as exclusive tools for R407C refrigerant.

No.	Tool name	Specifications
①	Gauge manifold	·Only for R407C.
		·Use the existing fitting SPECIFICATIONS. (UNF7/16)
		·Use high-tension side pressure of 3.43MPa·G or over.
②	Charge hose	·Only for R407C.
		·Use pressure performance of 5.10MPa·G or over.
③	Electronic scale	
④	Gas leak detector	·Use the detector for R134a or R407C.
⑤	Adapter for reverse flow check.	·Attach on vacuum pump.
⑥	Refrigerant charge base.	
⑦	Refrigerant cylinder.	·For R407C ·Top of cylinder (Brown)
		·Cylinder with syphon
⑧	Refrigerant recovery equipment.	

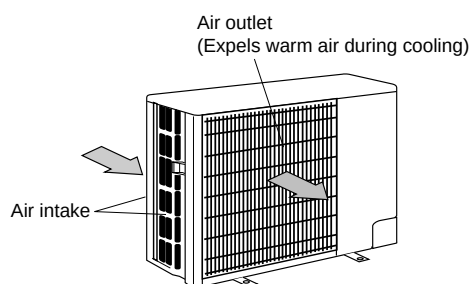
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COMBINATION OF INDOOR AND OUTDOOR UNITS

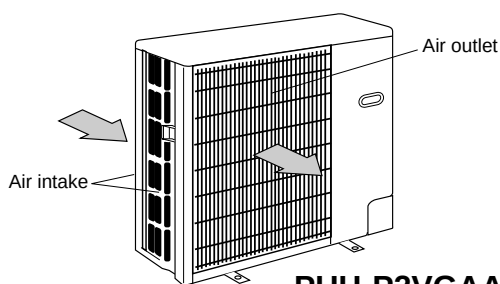
	Indoor unit		Outdoor unit							
			Heat pump type							
			PUH-P							
	Service Ref.	Service Manual No.	1.6 VGAA	2 VGAA	2.5 VGAA	3 YGAA	4 YGAA	5 YGAA	6 YGAA	
Heat pump with electric heater	PEHD-P*EAH	MEE 01K048	○	○	○	○	○	○	○	
	PCH-P*GAH ₁	OC182 REVISÉD EDITION-B	—	○	○	○	○	○	○	
	PKH-P*GALH ₁	OC176 REVISÉD EDITION-B	○	○	—	—	—	—	—	
	PKH-P*FALH ₂	OC175 REVISÉD EDITION-B	—	—	○	○	○	—	—	
	PSH-P*GAH ₁	OC212 REVISÉD EDITION-A	—	—	—	○	○	○	○	
Heat pump without electric heater or cooling only	PEAD-P*EA	MEE 01K048	○	○	○	○	○	○	○	
	PCA-P*GA ₁	OC182 REVISÉD EDITION-B	—	○	○	○	○	○	○	
	PKA-P*GAL ₁	OC176 REVISÉD EDITION-B	○	○	—	—	—	—	—	
	PKA-P*FAL ₂	OC175 REVISÉD EDITION-B	—	—	○	○	○	—	—	
	PSA-P*GA ₁	OC212 REVISÉD EDITION-A	—	—	—	○	○	○	○	
	PLA-P*KA ₁	OC286 REVISÉD EDITION-A	○	○	○	—	—	—	—	
	PLA-P*AA	OC287 REVISÉD EDITION-A	—	—	—	○	○	○	○	
	PMH-P*BA ₁	OC238 REVISÉD EDITION-B	○	○	—	—	—	—	—	
	PMH-P*BA ₂	OC279	○	○	—	—	—	—	—	

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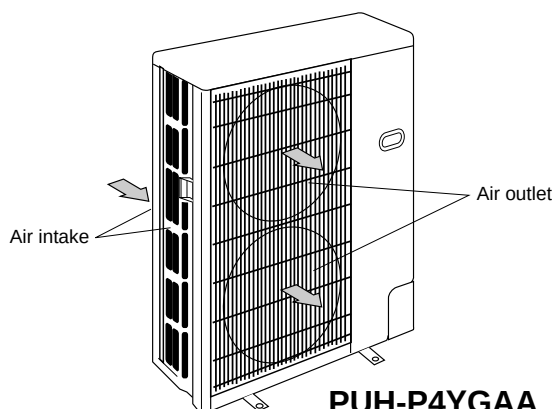
PART NAMES AND FUNCTIONS



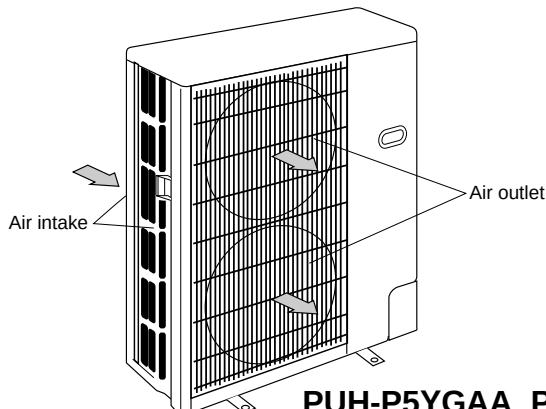
PUH-P1.6VGAA



**PUH-P2VGAA
PUH-P2.5VGAA
PUH-P3VGAA
PUH-P3YGAA**



PUH-P4YGAA



**PUH-P5YGAA PUH-P5YGAA₁
PUH-P6YGAA PUH-P6YGAA₁**

CHARGELESS SYSTEM

PRE-CHARGED REFRIGERANT IS SUPPLIED FOR PIPING LENGTH AT SHIPMENT.

(Max.20m(PUH-P1.6~P2.5) / 30m(PUH-P3~P6))

The refrigerant circuit with LEV(Linear Expansion Valve) and a large accumulator always control the optimal refrigerant level regardless of the length (20/30m max. and 5m min.) of piping. The additional refrigerant charging work during installation often causes problems. Heretofore it is completely eliminated. This unique system improves the quality and reliability of the work done. It also helps to speed up the installation time.

Service Ref.				PUH-P1.6VGAA				
OUTDOOR UNIT	Function			Cooling		Heating		
	Power supply (phase, cycle, voltage)			Single, 50Hz, 220-230-240V				
	Input		kW	1.59		1.64		
	Running current		A	7.29		7.52		
	Starting current		A	36				
	External finish			Munsell 5Y 8/1				
	Refrigerant control			Linear Expansion Valve				
	Compressor			Hermetic				
	Model			RE277VHSM				
	Motor output		kW	1.3				
	Starter type			Line start				
	Protection devices			Internal thermostat, HP switch, Discharge thermo				
	Crankcase heater		W	30				
	Heat exchanger			Plate fin coil				
	Fan	Fan(drive) × No.		Propeller (direct) × 1				
		Fan motor output		kW	0.07			
		Airflow		m³/min(CFM)	45(1,590)			
	Defrost method			Reverse cycle				
	Noise level		Cooling	dB	47			
			Heating	dB	49			
Dimensions		W	mm(in.)	900(35-7/16)				
		D	mm(in.)	330+20(13+3/4)				
		H	mm(in.)	650(25-5/8)				
Weight			kg(lbs)	54(119)				
REFRIGERANT PIPING	Refrigerant			R407C				
	Charge		kg(lbs)	2.5(5.5)				
	Oil (Model)		L	0.57(Ester)MEL56				
	Pipe size O.D.	Liquid	mm(in.)	9.52(3/8)				
		Gas	mm(in.)	15.88(5/8)				
	Connection method		Indoor side		Flared			
			Outdoor side		Flared			
	Between the indoor & outdoor unit		Height difference		Max. 40m			
			Piping length		Max. 40m			

Notes1. Rating Conditions (ISO T1)

Cooling : Indoor : D.B. 27°C(80°F), W.B. 19°C(66°F) Outdoor : D.B. 35°C(95°F), W.B. 24°C(75°F)

Heating : Indoor : D.B. 20°C(68°F)

Outdoor : D.B. 7°C(45°F), W.B. 6°C(43°F)

Refrigerant piping length (one way) : 5m (16ft)

2. Guaranteed operating range

		Indoor	Outdoor
Cooling	Upper limit	D.B. 35°C, W.B. 22.5°C	D.B. 46°C
	Lower limit	D.B. 19°C, W.B. 15°C	D.B. -5°C
Heating	Upper limit	D.B. 28°C	D.B. 24°C, W.B. 18°C
	Lower limit	D.B. 17°C	D.B. -11°C, W.B. -12°C

3. Above data based on indicated voltage

Indoor Unit 1 phase 240V 50Hz

Outdoor Unit 1 phase 240V 50Hz

Service Ref.				PUH-P2VGAA		PUH-P2.5VGAA	
OUTDOOR UNIT	Function			Cooling	Heating	Cooling	Heating
	Power supply (phase, cycle, voltage)			Single, 50Hz, 220-230-240V			
	Input	kW		2.29	2.36	2.77	2.68
	Running current	A		10.51	10.83	12.72	12.31
	Starting current	A		62		77	
	External finish			Munsell 5Y 8/1			
	Refrigerant control			Linear Expansion Valve			
	Compressor			Hermetic			
	Model			NE36VMJMT		NE41VMJMT	
	Motor output	kW		1.6		1.9	
	Starter type			Line start			
	Protection devices			Internal thermostat, HP switch, Discharge thermo			
	Crankcase heater	W		38			
	Heat exchanger			Plate fin coil			
	Fan	Fan(drive) × No.		Propeller (direct) × 1			
		Fan motor output	kW	0.07			
		Airflow	m³/min(CFM)	55(1,940)		55(1,940)	
Defrost method			Reverse cycle				
Noise level	Cooling	dB	48				
	Heating	dB	50				
Dimensions	W	mm(in.)	900(35-7/16)				
	D	mm(in.)	330+20(13+3/4)				
	H	mm(in.)	855(33-5/8)				
Weight		kg(lbs)	74(163)		79(174)		
REFRIGERANT PIPING	Refrigerant			R407C			
	Charge	kg(lbs)		2.6(5.7)		3.1(6.8)	
	Oil (Model)	L		1.2 (Ester)MEL56			
	Pipe size O.D.	Liquid	mm(in.)	9.52(3/8)			
		Gas	mm(in.)	15.88(5/8)			
	Connection method	Indoor side		Flared			
		Outdoor side		Flared			
	Between the indoor & outdoor unit	Height difference		Max. 40m		Max. 50m	
		Piping length		Max. 40m		Max. 50m	

Notes1. Rating Conditions (ISO T1)

Cooling : Indoor : D.B. 27°C(80°F), W.B. 19°C(66°F) Outdoor : D.B. 35°C(95°F), W.B. 24°C(75°F)
 Heating : Indoor : D.B. 20°C(68°F) Outdoor : D.B. 7°C(45°F), W.B. 6°C(43°F)
 Refrigerant piping length (one way) : 5m (16ft)

2. Guaranteed operating range

		Indoor	Outdoor
Cooling	Upper limit	D.B. 35°C, W.B. 22.5°C	D.B. 46°C
	Lower limit	D.B. 19°C, W.B. 15°C	D.B. -5°C
Heating	Upper limit	D.B. 28°C	D.B. 24°C, W.B. 18°C
	Lower limit	D.B. 17°C	D.B. -11°C, W.B. -12°C

3. Above data based on indicated voltage

Indoor Unit 1 phase 240V 50Hz
 Outdoor Unit 1 phase 240V 50Hz

Service Ref.				PUH-P3VGAA / PUH-P3YGAA		PUH-P4YGAA	
OUTDOOR UNIT	Function			Cooling	Heating	Cooling	Heating
	Power supply (phase, cycle, voltage)			Single, 50Hz, 220-230-240V/3-ph, 50Hz, 380-400-415V(4wires)		3-ph, 50Hz, 380-400-415V(4wires)	
	Input	kW		3.27	3.48	3.43	3.62
	Running current	A		15.01 / 5.04	15.98 / 5.36	5.28	5.58
	Starting current	A		93 / 47		49	
	External finish			Munsell 5Y 8/1			
	Refrigerant control			Linear Expansion Valve			
	Compressor			Hermetic			
	Model	NE52VNJMT / NE52YDKMT			NE56YDKMT		
	Motor output	kW		2.5		2.7	
	Starter type	Line start					
	Protection devices			Internal thermostat HP switch Discharge thermo	Thermal relay HP switch Discharge thermo	Thermal relay HP switch Discharge thermo	
	Crankcase heater	W		38			
	Heat exchanger			Plate fin coil			
	Fan	Fan(drive) × No.		Propeller (direct) × 1		Propeller (direct) × 2	
		Fan motor output	kW	0.07		0.07+0.07	
		Airflow	m³/min(CFM)	50(1,770)		85(3,000)	
	Defrost method			Reverse cycle			
	Noise level	Cooling	dB	49		51	
		Heating	dB	51		53	
	Dimensions	W	mm(in.)	900(35-7/16)			
		D	mm(in.)	330+20(13+3/4)			
		H	mm(in.)	855(33-5/8)		1,260(49-5/8)	
	Weight		kg(lbs)	79(174)		97(214)	
REFRIGERANT PIPING	Refrigerant			R407C			
	Charge	kg(lbs)		3.3(7.3)		4.0(8.8)	
	Oil (Model)	L		1.3 (Ester)MEL56			
	Pipe size O.D.	Liquid	mm(in.)	9.52(3/8)			
		Gas	mm(in.)	15.88(5/8)		19.05(3/4)	
	Connection method	Indoor side		Flared			
		Outdoor side		Flared			
	Between the indoor & outdoor unit	Height difference		Max. 50m			
		Piping length		Max. 50m			

Notes1. Rating Conditions (ISO T1)

Cooling : Indoor : D.B. 27°C(80°F), W.B. 19°C(66°F) Outdoor : D.B. 35°C(95°F), W.B. 24°C(75°F)

Heating : Indoor : D.B. 20°C(68°F) Outdoor : D.B. 7°C(45°F), W.B. 6°C(43°F)

Refrigerant piping length (one way) : 5m (16ft)

2. Guaranteed operating range

		Indoor	Outdoor
Cooling	Upper limit	D.B. 35°C, W.B. 22.5°C	D.B. 46°C
	Lower limit	D.B. 19°C, W.B. 15°C	D.B. -5°C
Heating	Upper limit	D.B. 28°C	D.B. 24°C, W.B. 18°C
	Lower limit	D.B. 17°C	D.B. -11°C, W.B. -12°C

3. Above data based on indicated voltage

Indoor Unit 1 phase 240V 50Hz

Outdoor Unit 1 phase 240V 50Hz / 3 phase 415V 50Hz

	Service Ref.			PUH-P5YGAA PUH-P5YGAA ₁		PUH-P6YGAA PUH-P6YGAA ₁	
OUTDOOR UNIT	Function			Cooling	Heating	Cooling	Heating
	Power supply (phase, cycle, voltage)			3-ph, 50Hz, 380-400-415V(4wires)			
	Input		kW	4.70	5.04	5.58	5.91
	Running current		A	7.25	7.77	8.60	9.11
	Starting current		A	65.5		74	
	External finish			Munsell 5Y 8/1			
	Refrigerant control			Linear Expansion Valve			
	Compressor			Hermetic			
	Model			ZR61KCE-TFD-230		ZR72KCE-TFD-230	
	Motor output		kW	3.5		4.2	
	Starter type			Line start			
	Protection devices			Internal thermostat, thermal relay, HP switch, Discharge thermo			
	Crankcase heater		W	38			
	Heat exchanger			Plate fin coil			
	Fan	Fan(drive) × No.		Propeller (direct) × 2			
		Fan motor output		kW	0.07 +0.07		
	REFRIGERANT PIPING	Airflow		m³/min(CFM)	95(3,360)		100(3,530)
Defrost method			Reverse cycle				
Noise level		Cooling	dB(A)	55		57	
		Heating	dB(A)	56		58	
Dimensions		W	mm(in.)	1,050(41-5/16)			
		D	mm(in.)	330+20(13+3/4)			
		H	mm(in.)	1,260(49-5/8)			
Weight		kg(lbs)	112(247)		113(249)		
Refrigerant			R407C				
Charge		kg(lbs)	4.6(10.1)		4.9(10.8)		
Oil (Model)		L	1.690 (Ester) 3MAW-POE		1.774 (Ester) 3MAW-POE		
Pipe size O.D.		Liquid	mm(in.)	9.52(3/8)			
		Gas	mm(in.)	19.05(3/4)			
Connection method		Indoor side		Flared			
		Outdoor side		Flared			
Between the indoor & outdoor unit		Height difference		Max. 50m			
		Piping length		Max. 50m			

Notes1. Rating Conditions (ISO T1)

Cooling : Indoor : D.B. 27°C(80°F), W.B. 19°C (66°F) Outdoor : D.B. 35°C(95°F), W.B. 24°C (75°F)

Heating : Indoor : D.B. 20°C(68°F)

Outdoor : D.B. 7°C(45°F), W.B. 6°C (43°F)

Refrigerant piping length (one way) : 5m (16ft)

2. Guaranteed operating range

		Indoor	Outdoor
Cooling	Upper limit	D.B. 35°C, W.B. 22.5°C	D.B. 46°C
	Lower limit	D.B. 19°C, W.B. 15°C	D.B. -5°C
Heating	Upper limit	D.B. 28°C	D.B. 24°C, W.B. 18°C
	Lower limit	D.B. 17°C	D.B. -11°C, W.B. -12°C

3. Above data based on indicated voltage

Indoor Unit 1 phase 240V 50Hz

Outdoor Unit 3 phase 415V 50Hz

6-1. REFILLING REFRIGERANT CHARGE (R407C : kg)

Service Ref.	Piping length (one way)					Factory charged
	10m	20m	30m	40m	50m	
PUH-P1.6VGAA	2.4	2.5	2.6	3.0	—	2.5
PUH-P2VGAA	2.5	2.6	3.1	3.7	—	2.6
PUH-P2.5VGAA	2.9	3.1	3.3	3.9	4.5	3.1
PUH-P3VGAA	2.9	3.1	3.3	3.9	4.5	3.3
PUH-P3YGAA	2.9	3.1	3.3	3.9	4.5	3.3
PUH-P4YGAA	3.4	3.7	4.0	4.7	5.4	4.0
PUH-P5YGAA PUH-P5YGAA ₁	4.0	4.3	4.6	5.3	6.0	4.6
PUH-P6YGAA PUH-P6YGAA ₁	4.3	4.6	4.9	5.6	6.3	4.9

Pipes beyond this length will require an additional charge of refrigerant.

6-2. COMPRESSOR TECHNICAL DATA

(at 20°C)
[Except P5, P6]

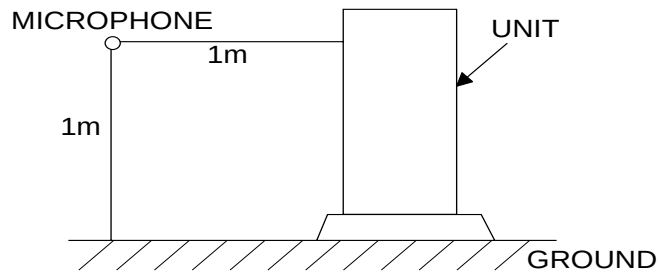
Unit		PUH-P1.6VGAA	PUH-P2VGAA	PUH-P2.5VGAA	PUH-P3VGAA	PUH-P3YGAA
Compressor model		RE277VHSM	NE36VMJMT	NE41VMJMT	NE52VNJMT	NE52YDKMT
Winding Resistance (Ω)	U-V (R-C)	1.80	0.89	0.87	0.64	3.59
	U-W (S-C)	3.00	2.03	2.22	1.67	3.59
	W-V	—	—	—	—	3.59

(at 25°C)

(at 25°C)

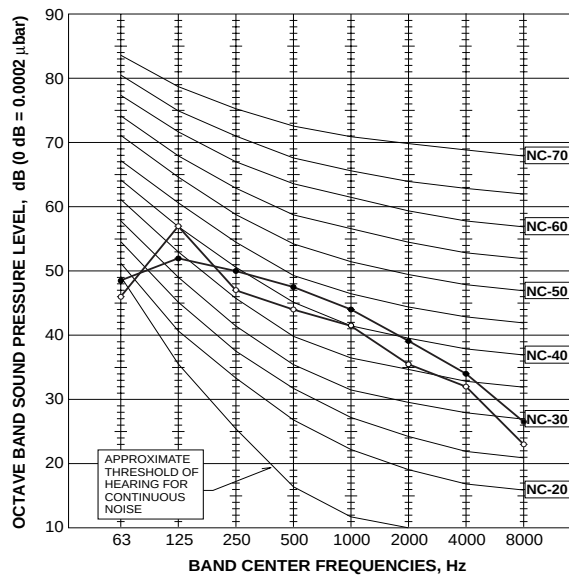
Unit		PUH-P4YGAA	PUH-P5YGAA PUH-P5YGAA ₁	PUH-P6YGAA PUH-P6YGAA ₁
Compressor model		NE56YDKMT	ZR61KCE-TFD-230	ZR72KCE-TFD-230
Winding Resistance (Ω)	U-V (R-C)	3.32	0.628 ~ 0.722	0.517
	U-W (S-C)	3.32	0.628 ~ 0.722	0.517
	W-V	3.32	0.628 ~ 0.722	0.517

6-3. NOISE CRITERION CURVES



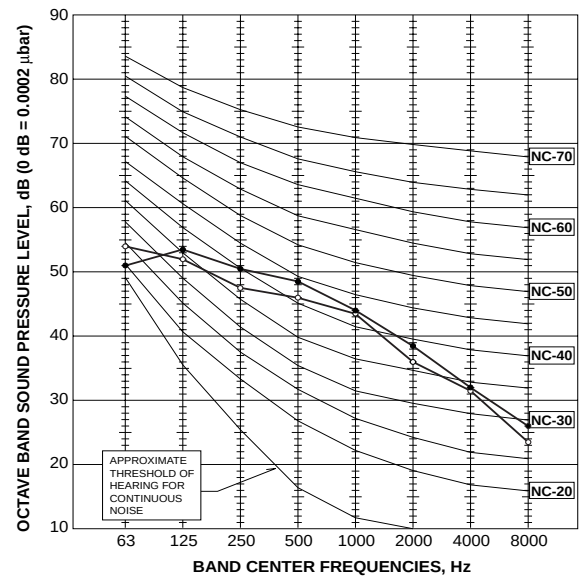
PUH-P1.6VGAA

MODE	SPL(dB)	LINE
COOLING	47	○—○
HEATING	49	●—●



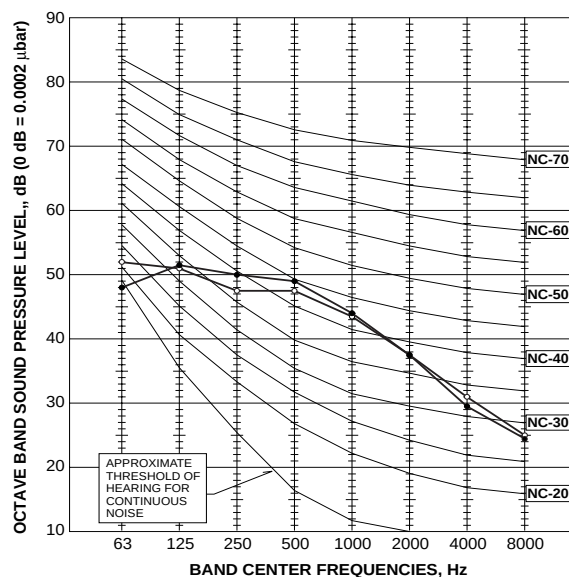
PUH-P2VGAA

MODE	SPL(dB)	LINE
COOLING	48	○—○
HEATING	50	●—●



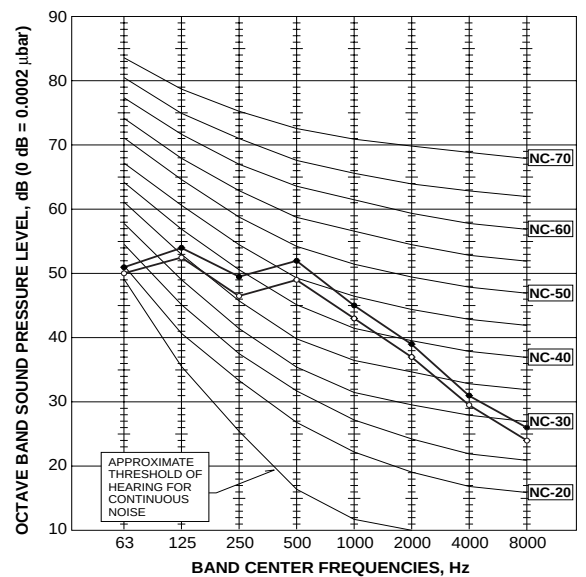
PUH-P2.5VGAA

MODE	SPL(dB)	LINE
COOLING	48	○—○
HEATING	50	●—●



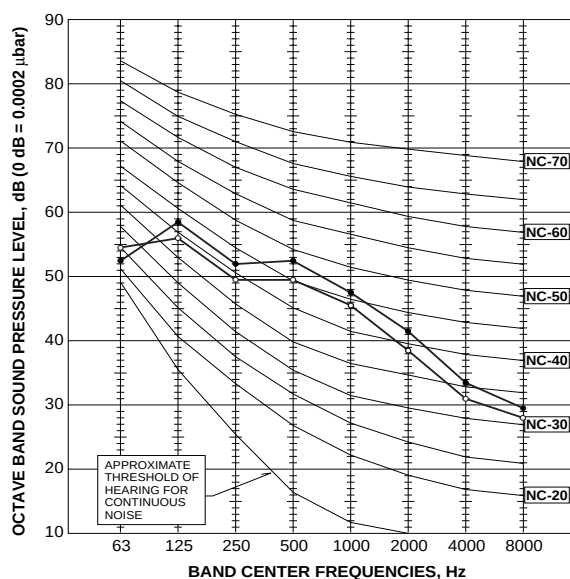
**PUH-P3VGAA
PUH-P3YGAA**

MODE	SPL(dB)	LINE
COOLING	49	○—○
HEATING	51	●—●



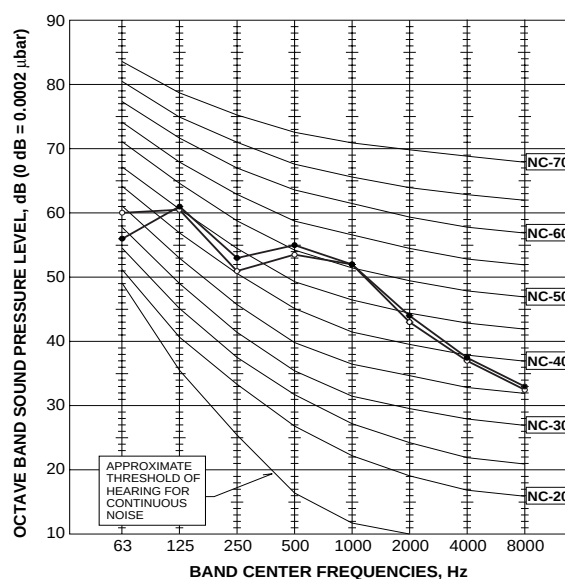
PUH-P4YGAA

MODE	SPL(dB)	LINE
COOLING	51	○—○
HEATING	53	●—●



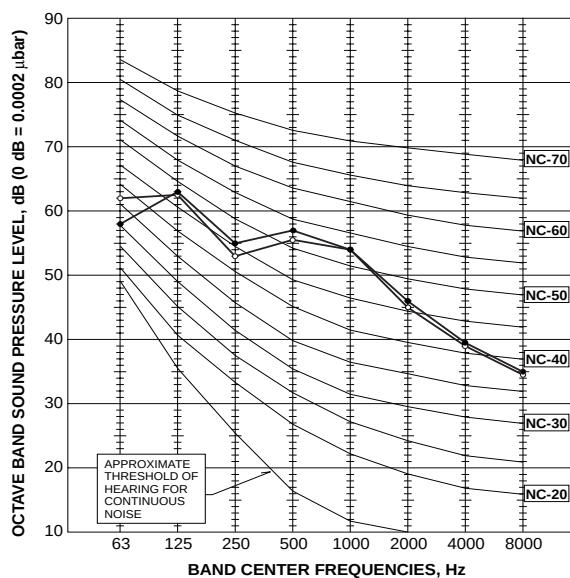
PUH-P5YGAA PUH-P5YGAA₁

MODE	SPL(dB)	LINE
COOLING	55	○—○
HEATING	56	●—●



PUH-P6YGAA PUH-P6YGAA₁

MODE	SPL(dB)	LINE
COOLING	57	○—○
HEATING	58	●—●



PUH-P2VGAA
PUH-P2.5VGAA
PUH-P3VGAA
PUH-P3YGAA

Unit : mm

1 FREE SPACE (Around the Unit)

The diagram below shows a basic example.
Explanation of particular details are given in the installation manuals etc.

2 SERVICE SPACE

Dimensions of space needed for service access are shown in the below diagram.

3 FOUNDATION BOLTS

Please secure the unit firmly with 4 foundation (M10) bolts. (Bolts and washers must be purchased locally).

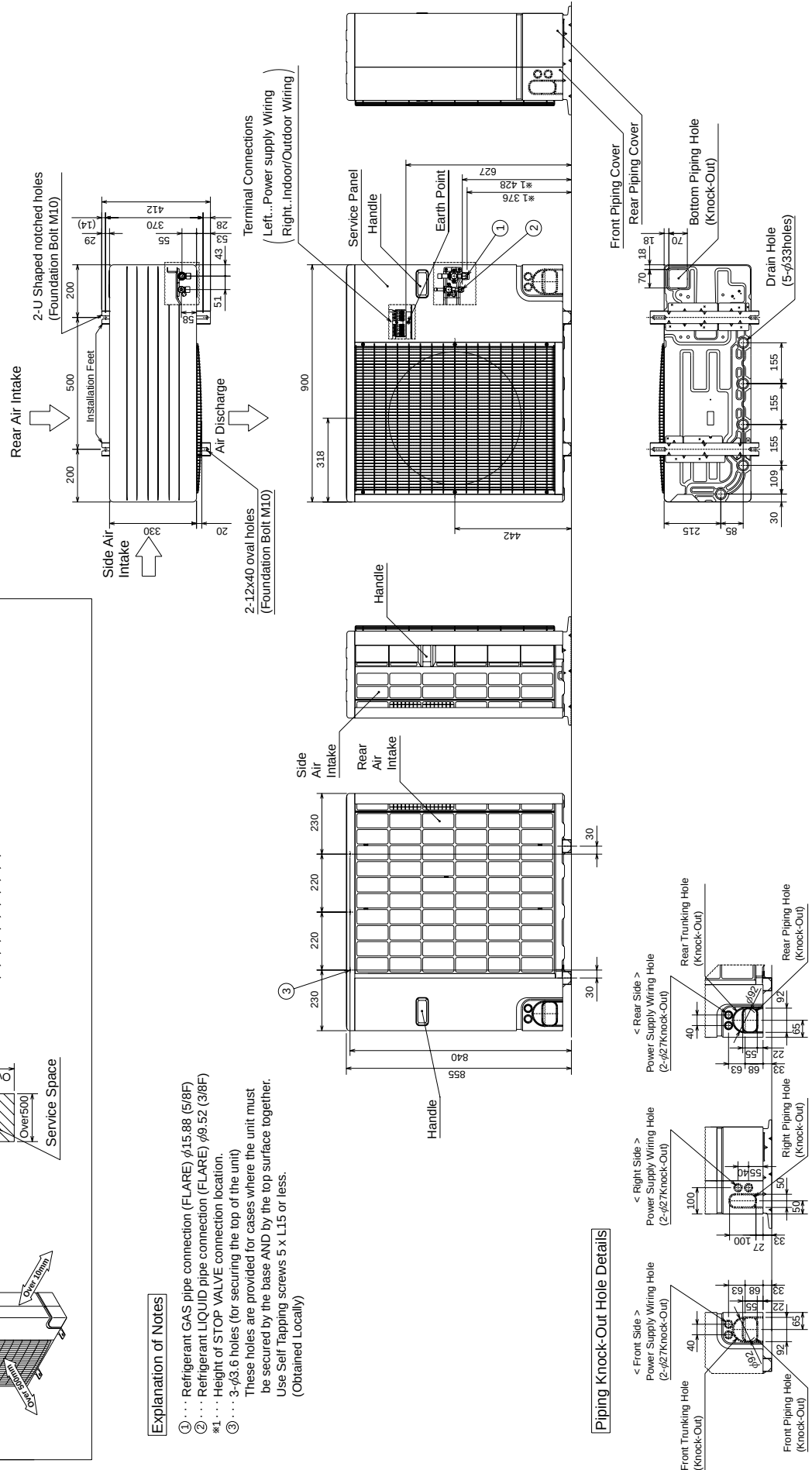
4 PIPING-WIRING DIRECTIONS

Piping and wiring connections can be made from 4 directions: Front, Right, Rear and Below.

Explanation of Notes

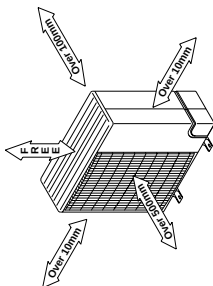
- ① . . . Refrigerant GAS pipe connection (FLARE) $\phi 15.88$ (5/8F)
- ② . . . Refrigerant LIQUID pipe connection (FLARE) $\phi 9.52$ (3/8F)
- *1 . . . Height of STOP VALVE connection location.
- ③ . . . 3- $\phi 3.6$ holes (for securing the top of the unit)

These holes are provided for cases where the unit must be secured by the base AND by the top surface together.
Use Self Tapping screws 5 x L15 or less.
(Obtained Locally)

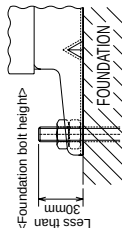


Explanation of particular details are given in the installation manuals etc.

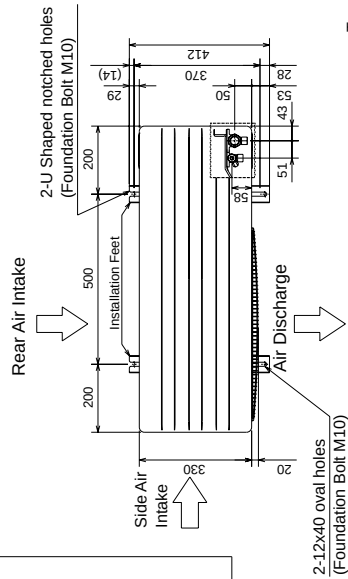
Dimensions of space needed for service access are shown in the below diagram.



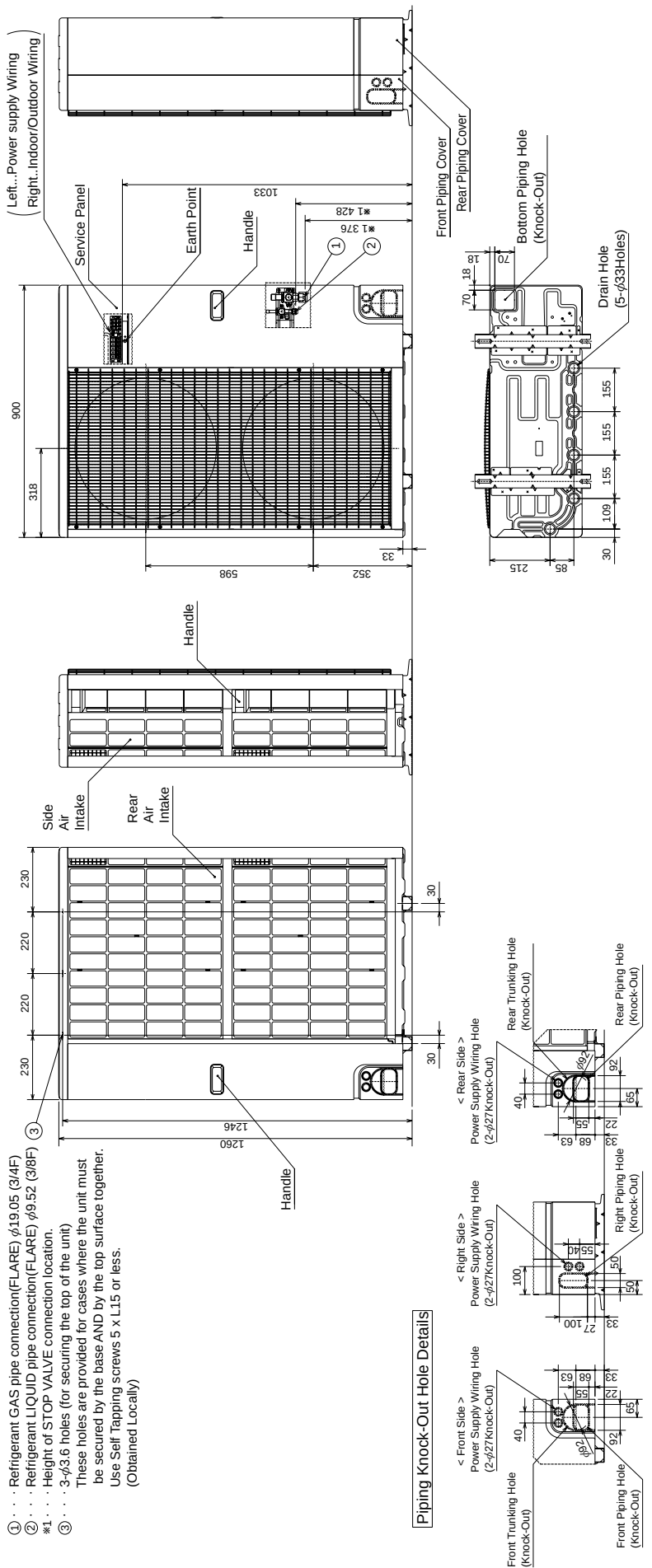
Please secure the unit firmly with 4 foundation (M10) bolts. (Bolts and washers must be purchased locally).



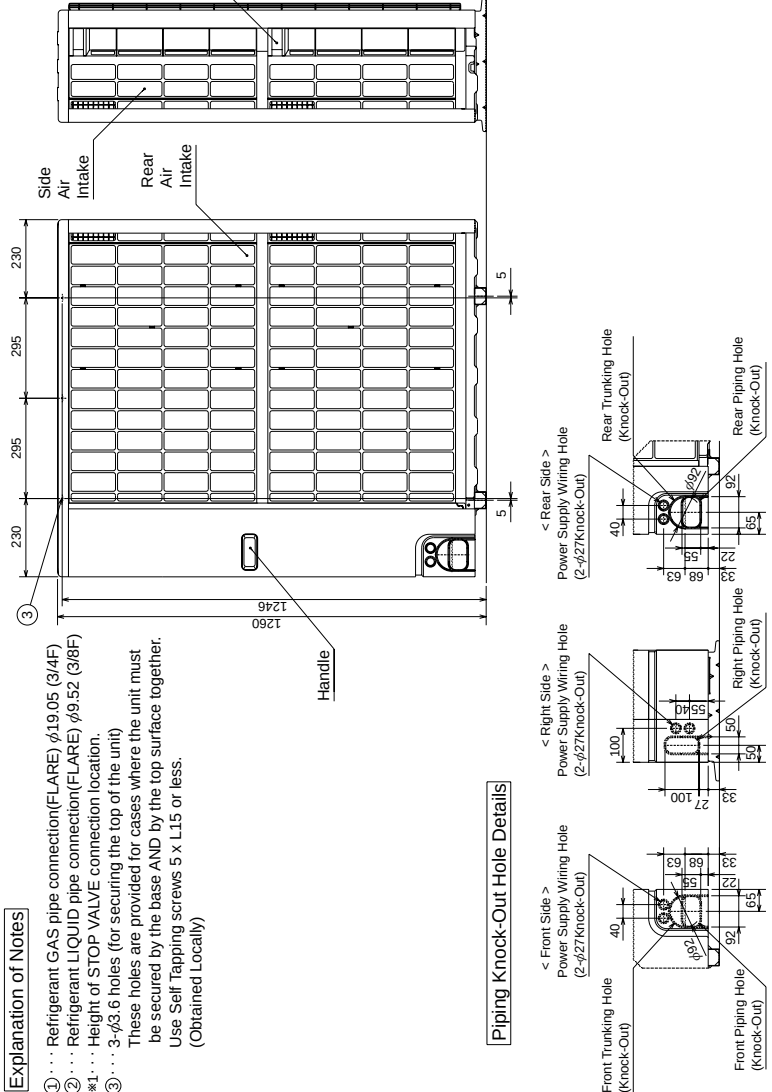
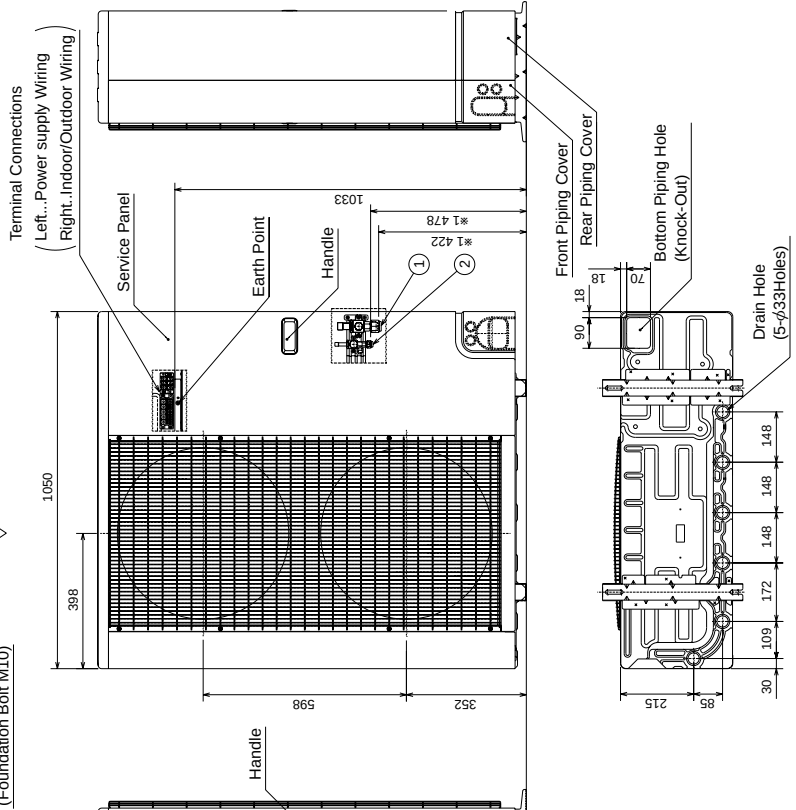
Piping and wiring connections can be made from 4 directions: Front, Right, Rear and Below.



- ① . Refrigerant GAS pipe connection (FLARE) $\phi 19.05$ (3/4")
- ② . Refrigerant LIQUID pipe connection (FLARE) $\phi 9.52$ (3/8")
- ③ . Height of STOP VALVE connection location.
※1 . 3- $\phi 3/8$ 6 holes (for securing the top of the unit)



Unit : mm



1	FREE SPACE (Around the Unit)
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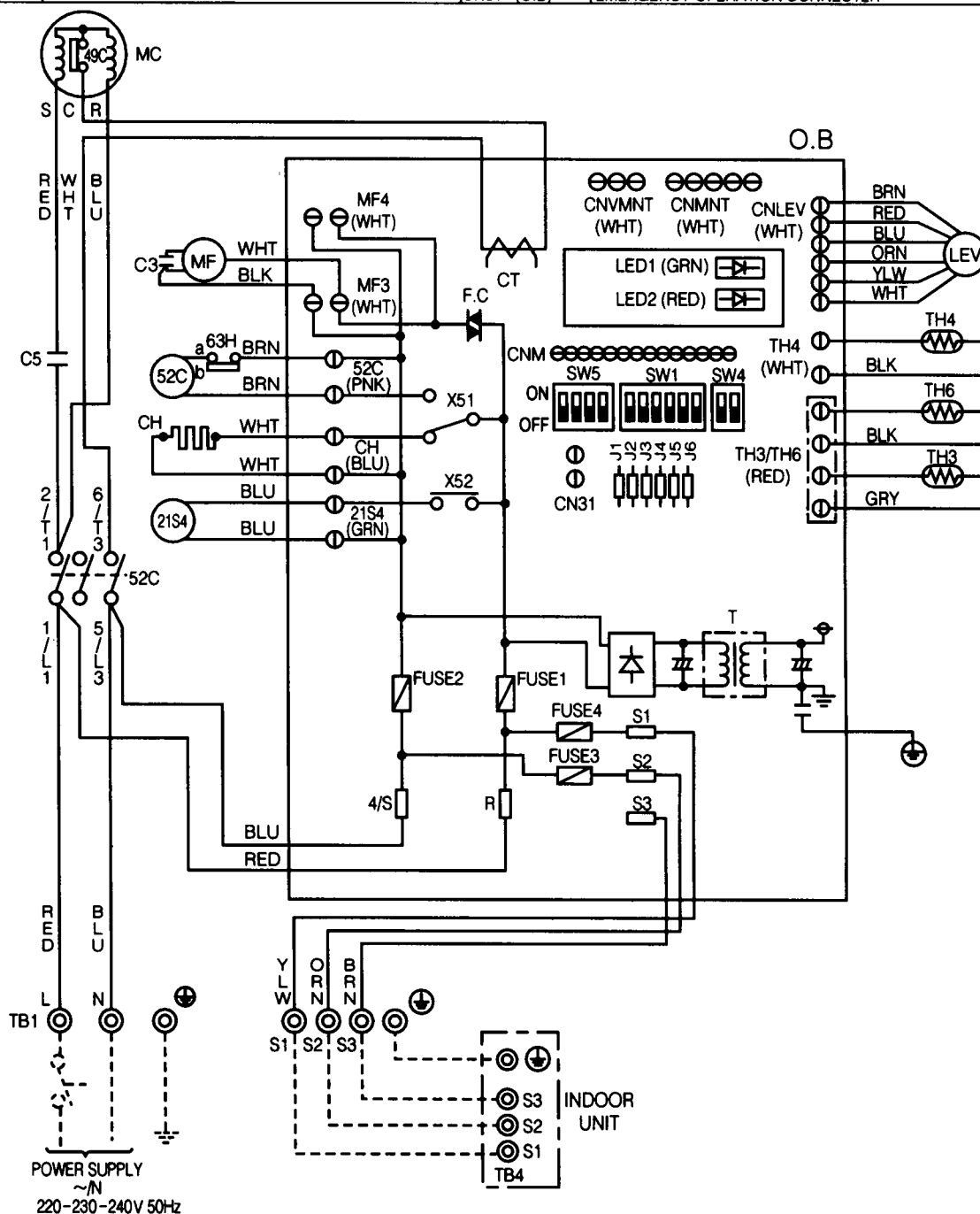
The diagram below shows a basic example.	Dimensions of space needed for service access are shown in the below diagram.	Please secure the unit firmly with 4 foundation (M10) bolts. (Bolts and washers must be purchased locally).	Piping and wiring connections can be made from 4 directions: Front, Right, Rear and Below.
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Explanation of Notes
① . . . Refrigerant GAS piping
② . . . Refrigerant LIQUID piping
*① . . . Height of STOP VALVE
③ . . . 3-φ3.6 holes (for securing these holes are provided by the body)
Use Self Tapping screws (Obtained Locally)

Piping Knock-Out Hole Details

PUH-P1.6VGAA PUH-P2VGAA PUH-P2.5VGAA PUH-P3VGAA

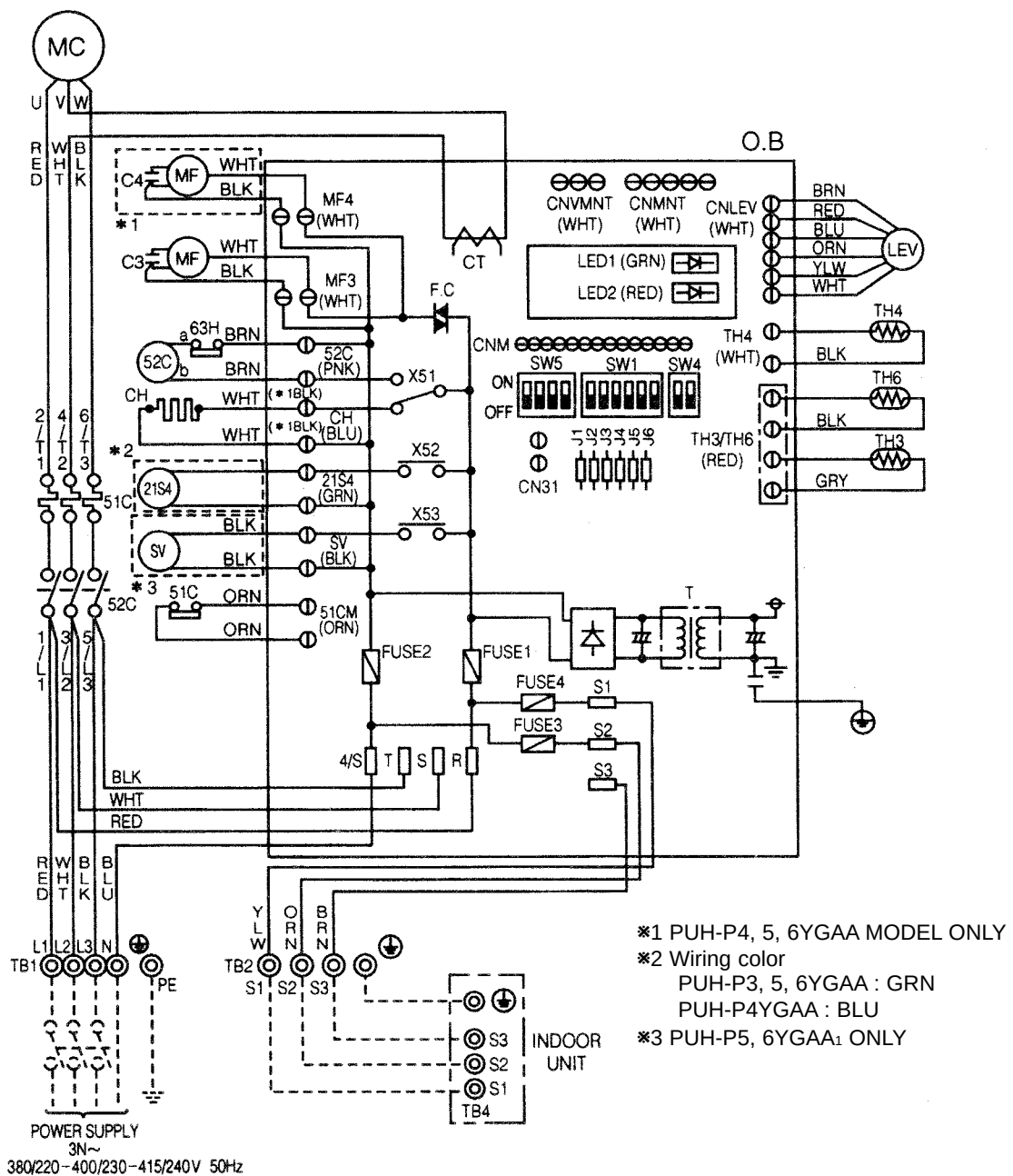
SYMBOL	NAME	SYMBOL	NAME
MC	COMPRESSOR (INNER THERMOSTAT)	O.B	OUTDOOR CONTROLLER BOARD
MF	FAN MOTOR (INNER THERMOSTAT)	FUSE1 (O.B)	FUSE (6.3A)
TH3	THERMISTOR	FUSE2 (O.B)	FUSE (6.3A)
TH4		FUSE3 (O.B)	FUSE (6.3A)
TH6		FUSE4 (O.B)	FUSE (6.3A)
C3	MF CAPACITOR	X51 (O.B)	MC/CH RELAY
C5	MC CAPACITOR	X52 (O.B)	21S4 RELAY
CH	CRANKCASE HEATER	F.C (O.B)	FAN CONTROLLER
52C	MC CONTACTOR	SW1 (O.B)	GROUP NUMBER ADDRESS
21S4	4-WAY VALVE SOLENOID COIL	SW4 (O.B)	TEST RUN
63H	HIGH PRESSURE PROTECT SWITCH	SW5 (O.B)	FUNCTION SELECTION
49C	INNER THERMOSTAT FOR MC	J1~J6 (O.B)	MODEL SELECTION
TB1	TERMINAL BLOCK	T (O.B)	TRANSFORMER
LEV	LINEAR EXPANSION VALVE	CT (O.B)	CURRENT TRANS
TB2	TERMINAL BLOCK	LED1 (O.B)	OPERATION CHECK DISPLAY LED
		LED2 (O.B)	OPERATION CHECK DISPLAY LED
		CN31 (O.B)	EMERGENCY OPERATION CONNECTER



<Notes when servicing>

Some fastening terminals have a lock mechanism: When removing the fastening terminal, push the projection (locking lever) on the terminal with your finger and pull it out.

SYMBOL	NAME	SYMBOL	NAME
MC	COMPRESSOR	O.B	OUTDOOR CONTROLLER BOARD
MF	FAN MOTOR (INNER THERMOSTAT)	FUSE1 (O.B)	FUSE (6.3A)
TH3	THERMISTOR	FUSE2 (O.B)	FUSE (6.3A)
TH4	LIQUID TEMP	FUSE3 (O.B)	FUSE (6.3A)
TH6	DISCHARGE TEMP	FUSE4 (O.B)	FUSE (6.3A)
	COND. / EVA. TEMP		
C3	MF CAPACITOR	X51 (O.B)	MC/CH RELAY
C4	MF CAPACITOR	X52 (O.B)	21S4 RELAY
CH	CRANKCASE HEATER	X53 (O.B)	SV RELAY
52C	MC CONTACTOR	F.C (O.B)	FAN CONTROLLER
21S4	4-WAY VALVE SOLENOID COIL	SW1 (O.B)	GROUP NUMBER ADDRESS
SV	BYPASS VALVE SOLENOID COIL	SW4 (O.B)	TEST RUN
63H	HIGH PRESSURE PROTECT SWITCH	SW5 (O.B)	FUNCTION SELECTION
51C	THERMAL RELAY	J1~J6 (O.B)	MODEL SELECTION
TB1	TERMINAL BLOCK	T (O.B)	TRANSFORMER
LEV	LINEAR EXPANSION VALVE	CT (O.B)	CURRENT TRANS
TB2	TERMINAL BLOCK	LED1 (O.B)	OPERATION CHECK DISPLAY LED
		LED2 (O.B)	OPERATION CHECK DISPLAY LED
		CN31 (O.B)	EMERGENCY OPERATION CONNECTOR



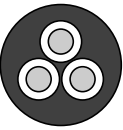
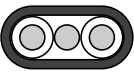
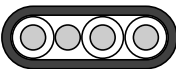
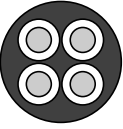
<Notes when servicing>

Some fastening terminals have a lock mechanism: When removing the fastening terminal, push the projection (locking lever) on the terminal with your finger and pull it out.

For 220-240V 50Hz

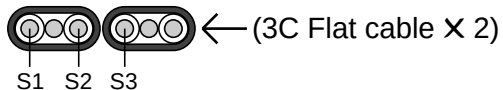
The cable shall not be lighter than design 245 IEC or 227 IEC.

The cable length may vary depending on the condition of installation, humidity or materials, etc.

Cross section of cable	Wire size (mm ²)	Number of wires	Polarity	L(m)
Round 	2.5	3	Clockwise : S1-S2-S3	(50) *1
Flat 	2.5	3	Not applicable (Because center wire has no cover finish)	Not applicable *2
Flat 	1.5	4	From left to right : S1-Open-S2-S3	(45) *3
Round 	2.5	4	Clockwise : S1-S2-S3-Open Connect S1 and S3 to the opposite angle	60 *4

*1 : In case that cable with stripe of yellow and green is available.

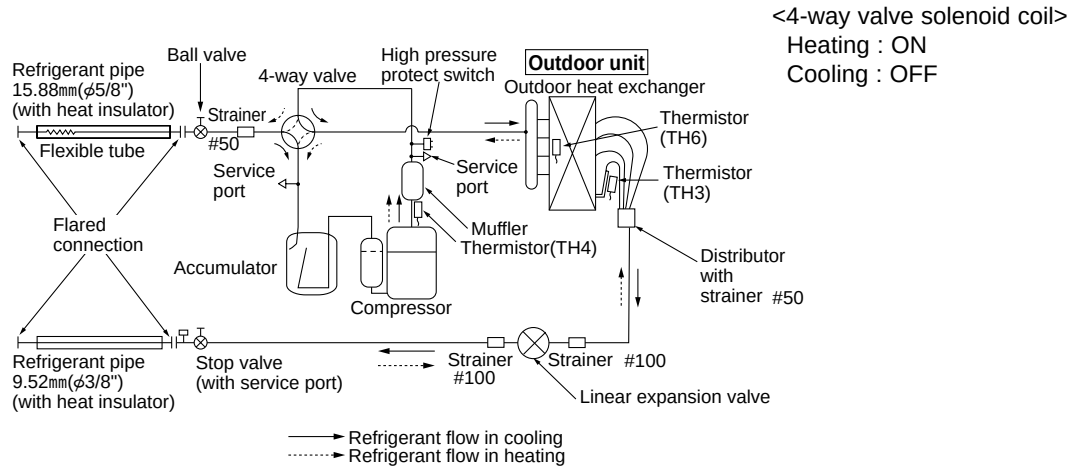
*2 : In the flat cables are connected as this picture, they can be used up to 80m.



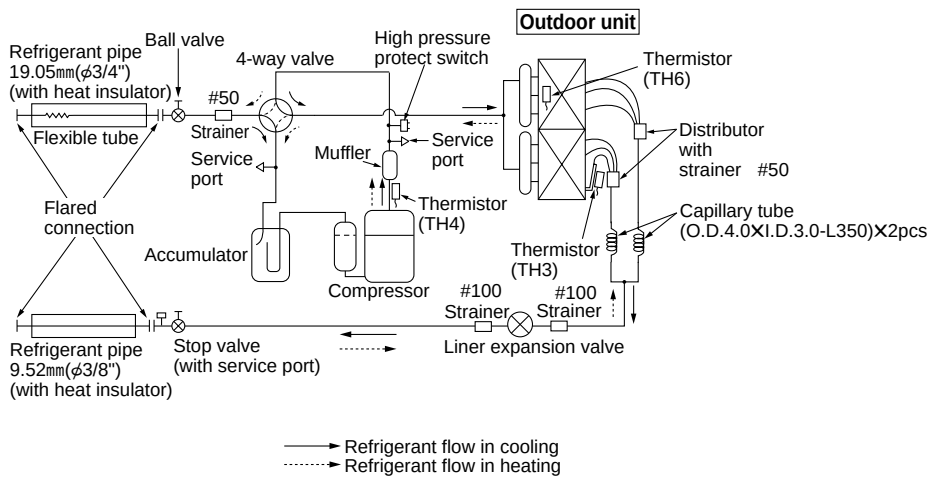
*3 : In case of regular polarity connection (S1-S2-S3), wire size is 1.5mm².

*4 : In case of regular polarity connection (S1-S2-S3).

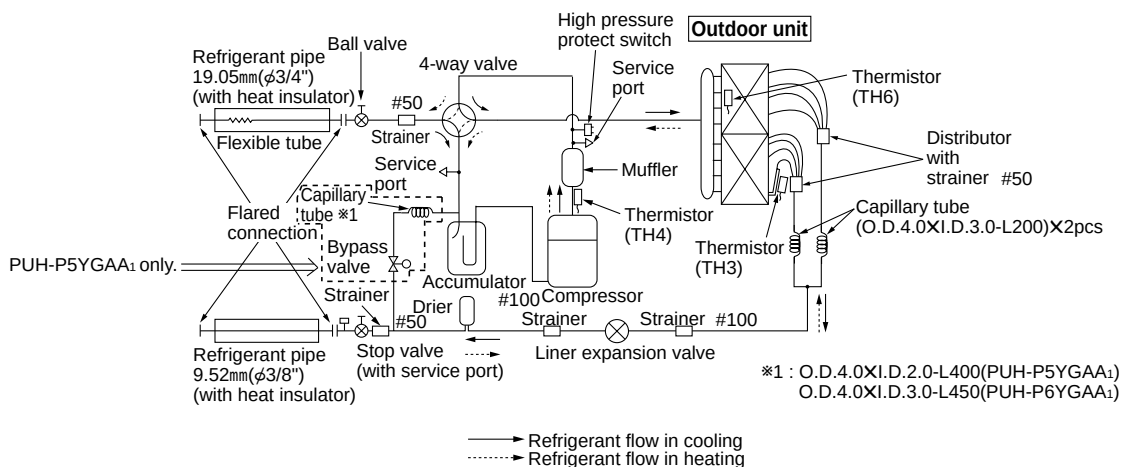
PUH-P1.6VGAA PUH-P2VGAA PUH-P2.5VGAA PUH-P3VGAA
PUH-P3YGAA



PUH-P4YGAA

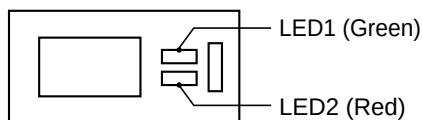


PUH-P5YGAA PUH-P6YGAA
PUH-P5YGAA₁ PUH-P6YGAA₁



11-1. SELF-DIAGNOSTIC FUNCTION

- The blinking patterns of two LEDs—LED1(Green) and LED2(Red)—show the diagnoses of troubles in case of malfunction.
- By A-control Service Tool [PAC-SK52ST] indicates the operation mode and inspection types. For the details, refer to "OCT03 REVISED EDITION-D".



Indication (O.B)		Error Name	Inspection method
LED1 (Green)	LED2 (Red)		
1 blink	1 blink	•Negative Phase detection •The wires of power supply and connecting wires of indoor / outdoor units are crossed with one another.	① Check if the wires of power supply are connected to their corresponding terminals on TB1. ② Check if the wirings are correct on power supply (TB1) and outdoor power supply board (TB2).
	2 blinks	•51CM connector open	① Check if the connectors of 51CM (51C) on outdoor controller board are disconnected. ② Check the continuity of connector 51CM (51C) by using a tester.
2 blinks	1 blink	•Indoor / outdoor unit connector mis-wiring •Excessive numbers of indoor units per an outdoor unit (five or more) •Mis-wiring of indoor / outdoor unit connection wires (crossed wiring or disconnection) •Start-up time is up	① Check if the wirings are correct on the connecting wires of indoor / outdoor units. ② Check if a single outdoor unit connects five or more indoor units.
	2 blinks	•Indoor / outdoor unit transmission error (Signal receiving error: Indoor controller side) •Indoor / outdoor unit transmission error (Transmitting error: Indoor controller side) •Indoor / outdoor unit transmission error (Signal receiving error :Outdoor controller side) •Indoor / outdoor unit transmission error (Transmitting error: Outdoor controller side)	① Check if the wirings are correct on the connecting wires of indoor / outdoor units. ② Check if there is noise on the wires of power supply and connecting wires of indoor / outdoor units. ③ Check if there is noise on both indoor and outdoor controller board. ④ Turn the power off and let the units operate again to confirm.
	3 blinks	•Remote controller transmission error (Signal receiving error: Remote controller side) •Remote controller transmission error (Transmitting error: Remote controller side) •Remote controller transmission error (Signal receiving error: Indoor controller side) •Remote controller transmission error (Transmitting error: Indoor controller side)	① Check if the wirings are correct on indoor units or remote controllers. ② Check if there is noise on the transmission lines of remote controllers. ③ Turn the power off and let the units operate again to confirm.
	4 blinks	•Undefined error code	① Check if there is noise on the transmission lines of remote controllers. ② Check if there is noise on the connecting wires of indoor/outdoor units. ③ Turn the power off and let the units operate again to confirm.

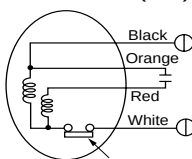
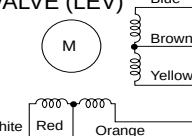
To be continued on the next page.

From the preceding page.

Indication (O.B)		Error Name	Inspection method
LED1 (Green)	LED2 (Red)		
3 blinks	1 blink	•Abnormal high discharge temperature(TH4)	① Check if ball valves are open. ② Check the continuity of connector (TH4) on outdoor controller board by using a tester. ③ Check if the unit fills the refrigerant at the same amount as specified.
	2 blinks	•Abnormal high pressure (High-pressure switch 63H has been tripped)	① Check if indoor / outdoor units have a short cycle on their air ducts. ② Check if the connector of 52C (63H) on outdoor controller board is disconnected. ③ Check if the units get their heat exchanger and filter dirty and clogged. ④ Measure resistance values among terminals on linear expansion valve by using a tester.
	3 blinks	•Protection from overheat operation (TH3)	① Check if outdoor unit has a short cycle on its air duct. ② Check if the connector of TH3 on outdoor controller board is disconnected.
	4 blinks	•Compressor's overcurrent (Overload) •Thermal relay (51C) has been tripped •Overcurrent has locked the operation of compressor in start-up.	① Check if ball valves are open. ② Measure resistance values among terminals on compressor by using a tester. ③ Check if outdoor unit has a short cycle on its air duct. ④ Check if the connector of 51CM (51C) on outdoor controller board is disconnected. ⑤ Check if the units get their heat exchanger and filter dirty and clogged.
	5 blinks	•Open / short circuit of discharge thermistor (TH4) •Open / short circuit of liquid pipe thermistor (TH3) •Open / short circuit of EVA / COND pipe thermistor (TH5)	① Check if the connectors of TH4, TH3, and TH6 on outdoor controller board are disconnected. ② Measure the resistance values of each thermistor (TH4, TH3, and TH6).
4 blinks	1 blinks	•Abnormality of room temperature thermistor (Indoor unit side: TH1) •Abnormality of Liquid pipe thermistor (Indoor unit side:TH2) •Abnormality of EVA / COND pipe thermistor (Indoor unit side: TH5)	① Check if the connectors of CN20, CN21, and CN29 on indoor controller board are disconnected. ② Measure the resistance values of each thermistor (TH1, TH2, and TH5).
	2 blinks	•Abnormality of drain sensor (Indoor unit side : (DS)) •Malfunction of drain-up machine	① Check if the connector of CN31 on outdoor controller board is disconnected. ② Measure the resistance value of drain sensor. ③ Measure resistance values among terminals on drain-up machine by using a tester.
	3 blinks	•Abnormality of pipe temperature	① Check if the connectors of CN20, CN21, and CN29 on indoor controller board are disconnected. ② Check if ball valves are open. ③ Check if the wirings are correct on the connecting wires of indoor / outdoor units.

11-2. HOW TO CHECK THE PARTS

PUH-P1.6, 2, 2.5, 3VGAA PUH-P3, 4, 5, 6YGAA PUH-P5, 6YGAA₁

Parts name	Check points																																																																																		
Liquid temperature thermistor (TH3) Discharge temperature thermistor (TH4) Condenser/evaporator temperature thermistor (TH6)	Disconnect the connector then measure the resistance using a tester. (Surrounding temperature 10℃~30℃) <table><tr><td></td><td>Normal</td><td>Abnormal</td></tr><tr><td>TH3</td><td>4.3kΩ~9.6kΩ</td><td rowspan="3">Open or short</td></tr><tr><td>TH4</td><td>160kΩ~410kΩ</td></tr><tr><td>TH6</td><td>4.3kΩ~9.6kΩ</td></tr></table> Refer to the next page for the details.		Normal	Abnormal	TH3	4.3kΩ~9.6kΩ	Open or short	TH4	160kΩ~410kΩ	TH6	4.3kΩ~9.6kΩ																																																																								
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TH3	4.3kΩ~9.6kΩ	Open or short																																																																																	
TH4	160kΩ~410kΩ																																																																																		
TH6	4.3kΩ~9.6kΩ																																																																																		
FAN MOTOR(MF)  OPEN :135±5℃ CLOSE:86±15℃	Measure the resistance between the terminals using a tester. (Surrounding temperature 20℃°) <table><tr><td rowspan="2">Motor lead wire</td><td colspan="2">Normal</td><td rowspan="2">Abnormal</td></tr><tr><td>P1.6, 2, 2.5, 3, 4</td><td>P5, 6</td></tr><tr><td>White — Black</td><td>96.5Ω ±10%</td><td>73.3Ω ±10%</td><td rowspan="2">Open or short</td></tr><tr><td>White — Red</td><td>138.8Ω ±10%</td><td>132.6Ω ±10%</td></tr></table>	Motor lead wire	Normal		Abnormal	P1.6, 2, 2.5, 3, 4	P5, 6	White — Black	96.5Ω ±10%	73.3Ω ±10%	Open or short	White — Red	138.8Ω ±10%	132.6Ω ±10%																																																																					
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White — Red	138.8Ω ±10%	132.6Ω ±10%																																																																																	
LINEAR EXPANSION VALVE (LEV) 	Disconnect the connector then measure the resistance using a tester. (Surrounding temperature 20℃) <table><tr><td colspan="4">Normal</td><td rowspan="2">Abnormal</td></tr><tr><td>White - Red</td><td>Yellow - Brown</td><td>Orange - Red</td><td>Blue - Brown</td></tr><tr><td colspan="4">150Ω ±10%</td><td>Open or short</td></tr></table>	Normal				Abnormal	White - Red	Yellow - Brown	Orange - Red	Blue - Brown	150Ω ±10%				Open or short																																																																				
Normal				Abnormal																																																																															
White - Red	Yellow - Brown	Orange - Red	Blue - Brown																																																																																
150Ω ±10%				Open or short																																																																															
4-WAY VALVE SOLENOID COIL (21S4)	Measure the resistance between the terminals using a tester. (Surrounding temperature 20℃°) <table><tr><td>Normal</td><td>Abnormal</td></tr><tr><td>1430Ω</td><td>Open or short</td></tr></table>	Normal	Abnormal	1430Ω	Open or short																																																																														
Normal	Abnormal																																																																																		
1430Ω	Open or short																																																																																		
BYPASS VALVE SOLENOID COIL (SV) Only PUH-P5YGAA ₁	Measure the resistance between the terminals using a tester. (Surrounding temperature 20°) <table><tr><td>Normal</td><td rowspan="2">Abnormal</td></tr><tr><td>P5, P6</td></tr><tr><td>1970Ω</td><td>Open or short</td></tr></table>	Normal	Abnormal	P5, P6	1970Ω	Open or short																																																																													
Normal	Abnormal																																																																																		
P5, P6																																																																																			
1970Ω	Open or short																																																																																		
CRANKCASE HEATER (CH)	Measure the resistance between the terminals using a tester. <table><tr><td colspan="2">Normal</td><td rowspan="2">Abnormal</td></tr><tr><td>P1.6</td><td>P2~P6</td></tr><tr><td>1920Ω ±7%</td><td>1516Ω ±7%</td><td>Open or short</td></tr></table>	Normal		Abnormal	P1.6	P2~P6	1920Ω ±7%	1516Ω ±7%	Open or short																																																																										
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P1.6	P2~P6																																																																																		
1920Ω ±7%	1516Ω ±7%	Open or short																																																																																	
COMPRESSOR (MC)  (P1.6~P2.5)  (P3~P6)	①Winding resistance(Ω) Measure the resistance between the terminals using a tester. (Surrounding temperature 20℃) <table><tr><td rowspan="2">Terminals</td><td colspan="5">Normal</td><td rowspan="2">Abnormal</td></tr><tr><td>PUH-P1.6VGAA RE277VHSM</td><td>PUH-P2VGAA NE36VMJMT</td><td>PUH-P2.5VGAA NE41VMJMT</td><td>PUH-P3VGAA NE52VNJMT</td><td>PUH-P3YGAA NE52YDKMT</td></tr><tr><td>U-V(R-C)</td><td>1.80Ω</td><td>0.89Ω</td><td>0.87Ω</td><td>0.64Ω</td><td>3.59Ω</td><td rowspan="3">Open or short</td></tr><tr><td>U-W(S-C)</td><td>3.00Ω</td><td>2.03Ω</td><td>2.22Ω</td><td>1.67Ω</td><td>3.59Ω</td></tr><tr><td>W-U</td><td>—</td><td>—</td><td>—</td><td>—</td><td>3.59Ω</td></tr></table> <table><tr><td rowspan="2">Terminals</td><td colspan="3">Normal</td><td rowspan="2">Abnormal</td></tr><tr><td>PUH-P4YGAA NE56YDKMT</td><td>PUH-P5YGAA, YGAA₁ ZR61KCE-TFD-230</td><td>PUH-P6YGAA, YGAA₁ ZR72KCE-TFD-230</td></tr><tr><td>U-V(R-C)</td><td>3.32Ω</td><td>0.628Ω — 0.722Ω</td><td>0.517Ω</td><td rowspan="3">Open or short</td></tr><tr><td>U-W(S-C)</td><td>3.32Ω</td><td>0.628Ω — 0.722Ω</td><td>0.517Ω</td></tr><tr><td>W-U</td><td>3.32Ω</td><td>0.628Ω — 0.722Ω</td><td>0.517Ω</td></tr></table> ②Internal inherent motor protection(49C) <table><tr><td>Internal inherent motor protection</td><td>PUH-P1.6VGAA RE277VHSM</td><td>PUH-P2VGAA NE36VMJMT</td><td>PUH-P2.5VGAA NE41VMJMT</td><td>PUH-P3VGAA NE52VNJMT</td><td>PUH-P3YGAA NE52YDKMT</td></tr><tr><td>Opening temp</td><td>115±5℃</td><td>115±5℃</td><td>115±5℃</td><td>115±5℃</td><td>115±5℃</td></tr><tr><td>Closing temp</td><td>85±7℃</td><td>85±7℃</td><td>85±7℃</td><td>85±7℃</td><td>85±7℃</td></tr></table> <table><tr><td>Internal inherent motor protection</td><td>PUH-P4YGAA NE56YDKMT</td><td>PUH-P5YGAA, YGAA₁ ZR61KCE-TFD-230</td><td>PUH-P6YGAA, YGAA₁ ZR72KCE-TFD-230</td></tr><tr><td>Opening temp</td><td>115±5℃</td><td>130±5℃</td><td>175±5℃</td></tr><tr><td>Closing temp</td><td>85±7℃</td><td>61±9℃</td><td>61±9℃</td></tr></table>	Terminals	Normal					Abnormal	PUH-P1.6VGAA RE277VHSM	PUH-P2VGAA NE36VMJMT	PUH-P2.5VGAA NE41VMJMT	PUH-P3VGAA NE52VNJMT	PUH-P3YGAA NE52YDKMT	U-V(R-C)	1.80Ω	0.89Ω	0.87Ω	0.64Ω	3.59Ω	Open or short	U-W(S-C)	3.00Ω	2.03Ω	2.22Ω	1.67Ω	3.59Ω	W-U	—	—	—	—	3.59Ω	Terminals	Normal			Abnormal	PUH-P4YGAA NE56YDKMT	PUH-P5YGAA, YGAA ₁ ZR61KCE-TFD-230	PUH-P6YGAA, YGAA ₁ ZR72KCE-TFD-230	U-V(R-C)	3.32Ω	0.628Ω — 0.722Ω	0.517Ω	Open or short	U-W(S-C)	3.32Ω	0.628Ω — 0.722Ω	0.517Ω	W-U	3.32Ω	0.628Ω — 0.722Ω	0.517Ω	Internal inherent motor protection	PUH-P1.6VGAA RE277VHSM	PUH-P2VGAA NE36VMJMT	PUH-P2.5VGAA NE41VMJMT	PUH-P3VGAA NE52VNJMT	PUH-P3YGAA NE52YDKMT	Opening temp	115±5℃	115±5℃	115±5℃	115±5℃	115±5℃	Closing temp	85±7℃	85±7℃	85±7℃	85±7℃	85±7℃	Internal inherent motor protection	PUH-P4YGAA NE56YDKMT	PUH-P5YGAA, YGAA ₁ ZR61KCE-TFD-230	PUH-P6YGAA, YGAA ₁ ZR72KCE-TFD-230	Opening temp	115±5℃	130±5℃	175±5℃	Closing temp	85±7℃	61±9℃	61±9℃
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<Thermistor characteristic graph>

Thermistor for lower temperature

Liquid temperature thermistor (TH3)
Condenser/evaporator temperature thermistor (TH6)

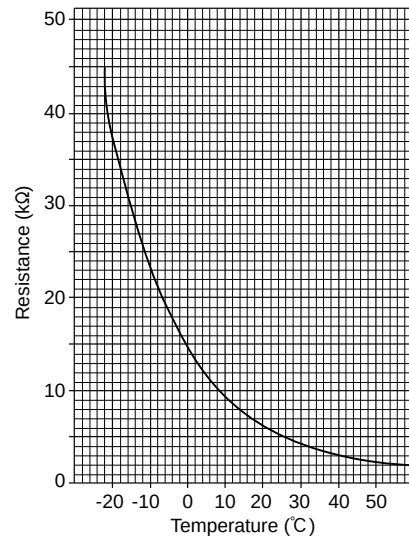
Thermistor $R_0 = 15k\Omega \pm 3\%$

Fixed number of $B = 3480K \pm 2\%$

$$R_t = 15 \exp \left\{ 3480 \left(\frac{1}{273+t} - \frac{1}{273} \right) \right\}$$

0°C	15kΩ
10°C	9.6kΩ
20°C	6.3kΩ
25°C	5.2kΩ
30°C	4.3kΩ
40°C	3.0kΩ

< Thermistor for lower temperature >



Thermistor for higher temperature

Discharge temperature thermistor (TH4)

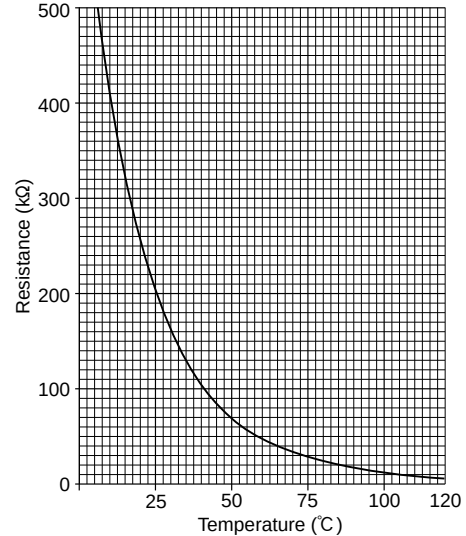
Thermistor $R_{120} = 7.465k\Omega \pm 2\%$

Fixed number of $B = 4057K \pm 2\%$

$$R_t = 7.465 \exp \left\{ 4057 \left(\frac{1}{273+t} - \frac{1}{393} \right) \right\}$$

10°C	410kΩ
20°C	250kΩ
30°C	160kΩ
40°C	104kΩ
50°C	70kΩ
60°C	48kΩ
70°C	34kΩ
80°C	24kΩ
90°C	17.5kΩ
100°C	13.0kΩ
110°C	9.8kΩ

< Thermistor for higher temperature >

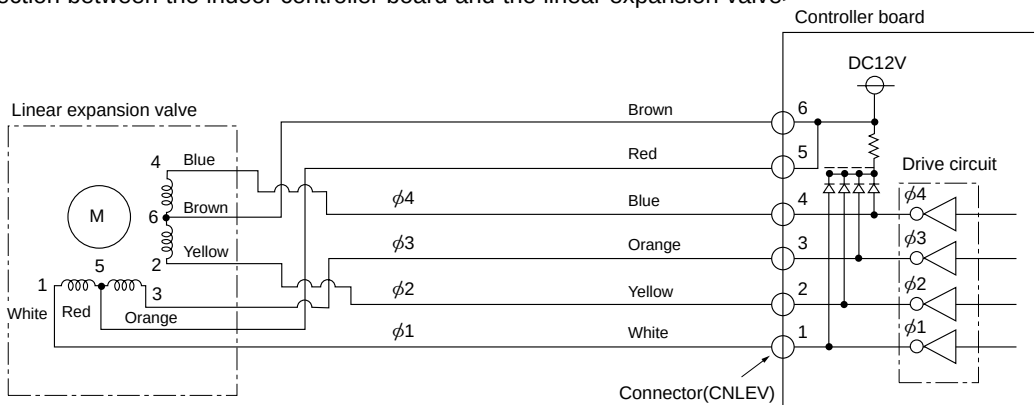


Linear expansion valve

(1) Operation summary of the linear expansion valve.

- Linear expansion valve open/close through stepping motor after receiving the pulse signal from the indoor controller board.
- Valve position can be changed in proportion to the number of pulse signal.

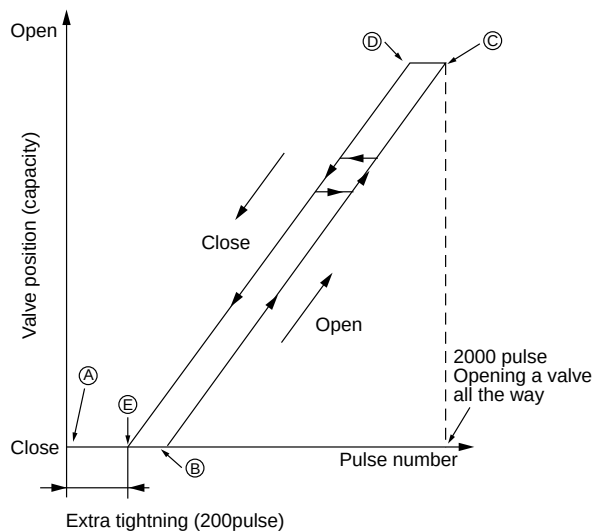
<Connection between the indoor controller board and the linear expansion valve>



<Output pulse signal and the valve operation>

Output (Phase)	Output			
	1	2	3	4
$\phi 1$	ON	OFF	OFF	ON
$\phi 2$	ON	ON	OFF	OFF
$\phi 3$	OFF	ON	ON	OFF
$\phi 4$	OFF	OFF	ON	ON

(2) Linear expansion valve operation



Closing a valve : 1 → 2 → 3 → 4 → 1
Opening a valve : 4 → 3 → 2 → 1 → 4

The output pulse shifts in above order.

- ※ 1. When linear expansion valve operation stops, all output phase become OFF.
- 2. At phase interruption or when phase does not shift in order, motor does not rotate smoothly and motor will locks and vibrates.

- ※ When the switch is turned on, 2200 pulse closing valve signal will be send till it goes to point A in order to define the valve position.

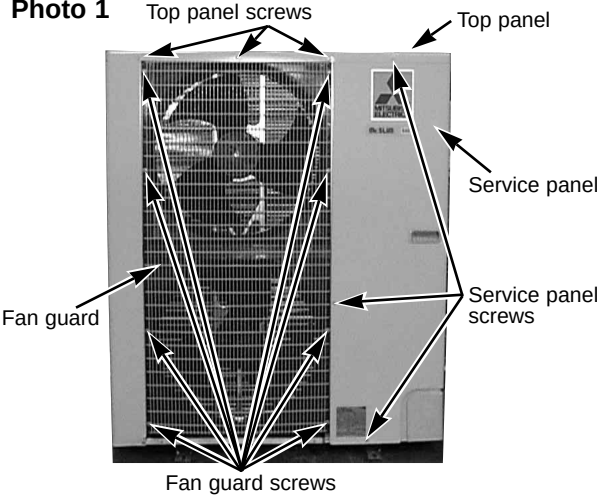
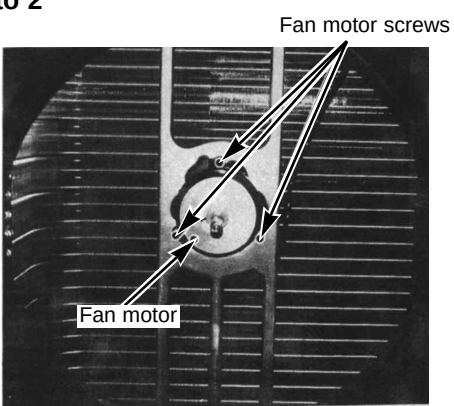
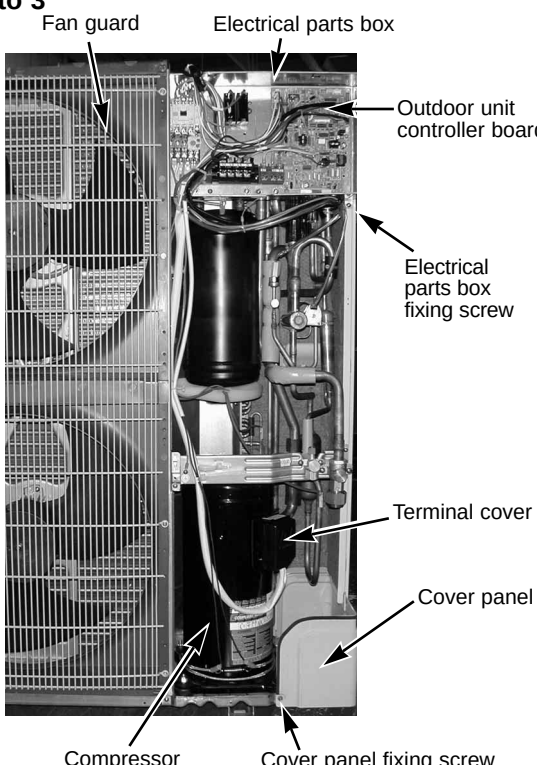
When the valve move smoothly, there is no noise or vibration occurring from the linear expansion valve : however, when the pulse number moves from E to A or when the valve is locked, more noise can be heard than normal situation.

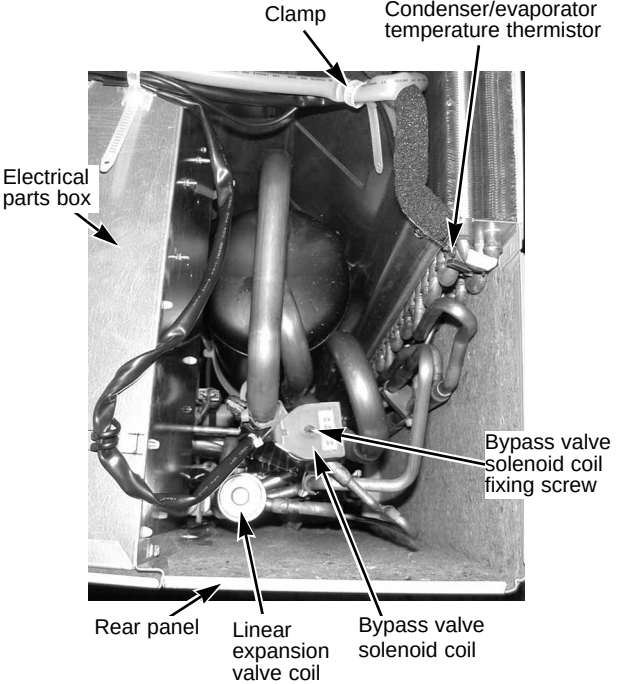
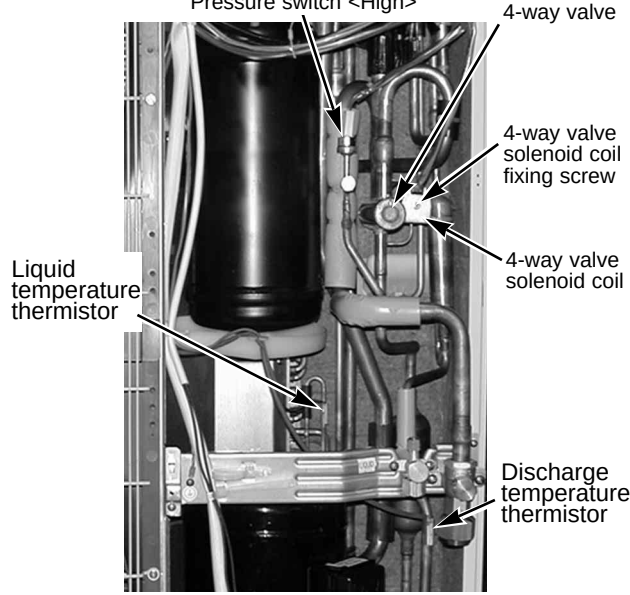
- ※ Noise can be detected by placing the ear against the screw driver handle while putting the screw driver to the linear expansion valve.

(3) Trouble shooting

Problem	Check point	Corrective measure
Operation circuit failure of the micro processor.	Remove the connector from the controller board and connect diagnostic LEDs. When power is turned on, pulse signals will output for 10 seconds. There must be some defects in the operation circuit if the LED dose not light while the signals are output or keeps lighting even after the signals stop.	Exchange the indoor controller board at drive circuit failure.
Linear expansion valve mechanism is locked.	Motor will idle and make ticking noise when motor is operated while the linear expansion valve is locked. This ticking sound is the sign of the abnormality.	Exchange the linear expansion vale.
Short or breakage of the motor coil of the linear expansion valve.	Measure the resistance between the each coil (white-red, yellow-brown, orange-red, blue-brown) using a tester. It is normal if the resistance is in the range of $150\Omega \pm 10\%$.	Exchange the linear expansion valve.
Wrong connection of the connector or contact failure.	① Check improperly connected connector terminals and the wire colors. ② Remove the connector on the controller board side and check electrical conductance	Disconnect the connector at the controller board, then check the continuity.

PUH-P5YGAA PUH-P6YGAA
 PUH-P5YGAA₁ PUH-P6YGAA₁

OPERATING PROCEDURE	PHOTOS
1. Removing the Service panel and Top panel (1) Remove the 3 service panel fixing screws (5 X 15) and slide the hook to remove the service panel. (2) Remove the screws (3 for front, 2 for rear/5 X 15) of the top panel and remove it. <When the rear screws of the top panel are not possible to remove> Remove the 3 front screws (5 X 15) of the top panel and lift the front side of the top panel.	Photo 1  Top panel screws Top panel Service panel Service panel screws Fan guard Fan guard screws
2. Removing the Fan and Fan motor (1) Remove the 6 fan guard screws (5 X 15) to remove it. (See Photo 1) (2) Remove the propeller nut (M8) and propeller fan. (3) Remove the 3 fan motor screws (5 X 25) to remove the fan motor.	Photo 2  Fan motor screws Fan motor
3. Removing the Electrical parts box (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove the Bypass valve, Crankcase heater, Pressure switch<for high pressure>, Liquid temperature thermistor, Discharge temperature thermistor, condenser/evaporator temperature thermistor and 4-way valve from the connector housing on the controller board, then disconnect the fan motor lead wire from the housing mentioned before and the condenser lead wire for the fan from the electrical parts box. <Diagram symbol in the connector housing> Bypass valve solenoid coil (SV) · Crankcase heater (CH) Pressure switch <for high pressure> (63H) Liquid temperature thermistor (TH3) Discharge temperature thermistor (TH4) Condenser/evaporator temperature thermistor (TH6) 4-way valve solenoid coil (21S4) · Fan motor (MF3, MF4) (4) Remove the terminal cover and disconnect the compressor lead wire and inner thermal device terminal. (5) Remove the electrical parts box screw (4 X 10) and lift the box to remove it. The electrical parts box cover is hooked at 2 points on the left and 1 point on the right.	Photo 3  Fan guard Electrical parts box Outdoor unit controller board Electrical parts box fixing screw Terminal cover Cover panel Compressor Cover panel fixing screw

OPERATING PROCEDURE	PHOTOS
4. Removing the liquid temperature thermistor, discharge temperature thermistor and condenser/evaporator temperature thermistor (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (When the top panel removing is not possible, remove the electrical parts box. Refer to 3.) ※ When removing liquid temperature thermistor and the discharge temperature thermistor, it unnecessary to remove the top panel. (See Photo 5) (3) Disconnect the lead wire of the liquid temperature thermistor, discharge temperature thermistor and condenser/evaporator temperature thermistor from the housing (TH3, TH4, TH6) on the controller board. (4) Loosen the 1 lead wire clamps on the electrical parts box. (5) Pull out the thermistor from the sensor holder.	Photo 4  Clamp Condenser/evaporator temperature thermistor Electrical parts box Bypass valve solenoid coil fixing screw Rear panel Linear expansion valve coil Bypass valve solenoid coil
(Only PUH-P5YGAA₁ and PUH-P6YGAA₁) 5. Removing the bypass valve solenoid coil (SV) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (When the top panel removing is not possible, remove the electrical box. Refer to 3.) (3) Remove coil fixing screw (M4 X 8) and disconnect the lead wire of the bypass valve solenoid coil (SV) from on the controller board.	Photo 5  Pressure switch <High> 4-way valve 4-way valve solenoid coil fixing screw 4-way valve solenoid coil Liquid temperature thermistor Discharge temperature thermistor
6. Removing the bypass valve (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove the bypass valve solenoid coil. (See Photo 4) (4) Remove the braze at the intake and outlet of the bypass valve. Note: When installing the bypass valve, cover it with a wet cloth to prevent it from heating, then braze the pipe.	
7. Removing the 4-way valve solenoid coil (21S4) (1) Remove the service panel. (See Photo 1) (2) Remove 4-way valve solenoid coil fixing screw (M5 X 6) and disconnect the lead wire of the 4-way valve solenoid coil (21S4) from the controller board.	
8. Removing the 4-way valve (1) Remove the service panel. (See Photo 1) (2) Remove the 4-way valve solenoid coil. (See Photo 5) (3) Remove the braze pipe of the 4-way valve. Note: When installing the 4-way valve, cover it with a wet cloth to prevent it from heating, then braze the pipes.	

OPERATING PROCEDURE

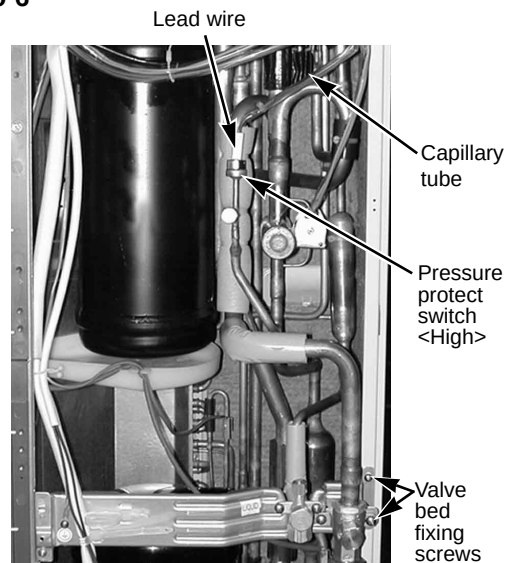
9. Removing the High pressure protect switch

- (1) Remove the service panel. (See Photo 1)
- (2) Remove the top panel. (See Photo 1)
- (3) Remove the electrical parts box. (See Photo 3)
- (4) Disconnect the lead wire of the pressure protect switch. (See Photo 6)
- (5) Remove the braze part of the pressure switch.

Note : When installing the pressure protect switch, cover the pressure protect switch with a wet cloth to prevent the pressure protect switch from heating, then braze it.

PHOTOS

Photo 6



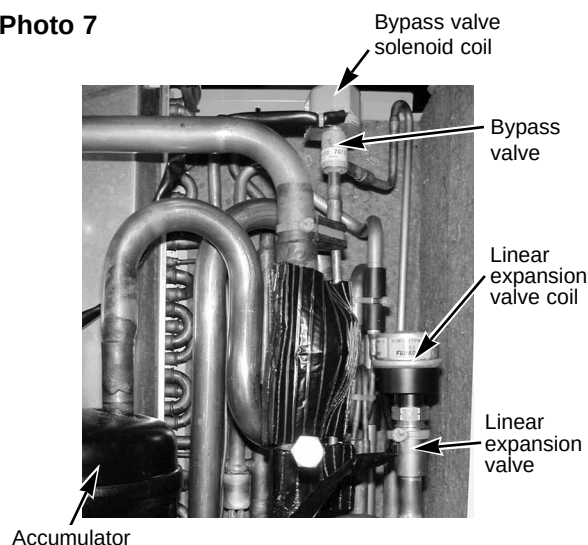
10. Removing the linear expansion valve

- (1) Remove the service panel. (See Photo 1)
- (2) Remove the top panel. (See Photo 1)
- (3) Remove the electrical parts box. (See Photo 3)
- (4) Remove the linear expansion valve coil. (See Photo 7)
- (5) Remove the braze pipes of the linear expansion valve.

Note 1: When installing the linear expansion valve, remove its coil and cover the valve with a wet cloth so as to prevent it from heating, then braze the pipes.

Note 2: By detaching the rear panel, the brazed parts will easily become separated.

Photo 7



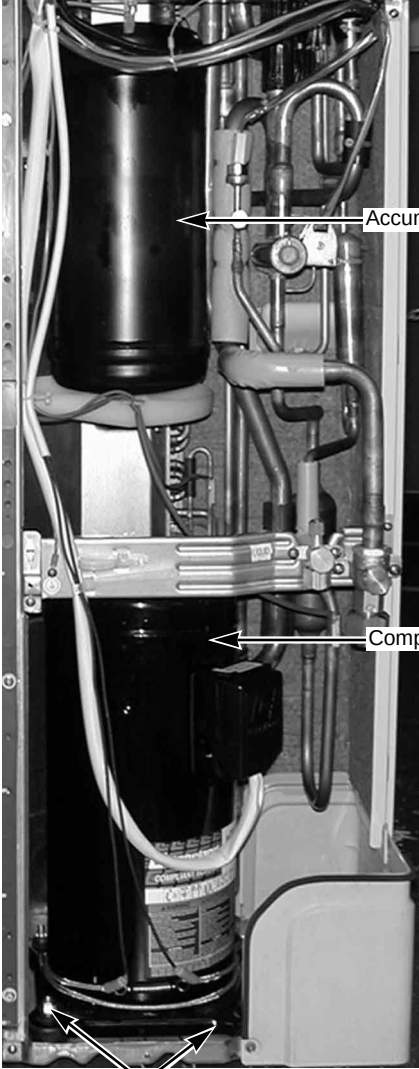
11. Removing the Bell mouth

- (1) Remove the 6 fan guard fixing screws (5 X 15) to remove it. (See Photo 1)
- (2) Remove the top panel.
- (3) Remove a bell mouth fixing screw (5 X 15) to remove it.

Photo 8

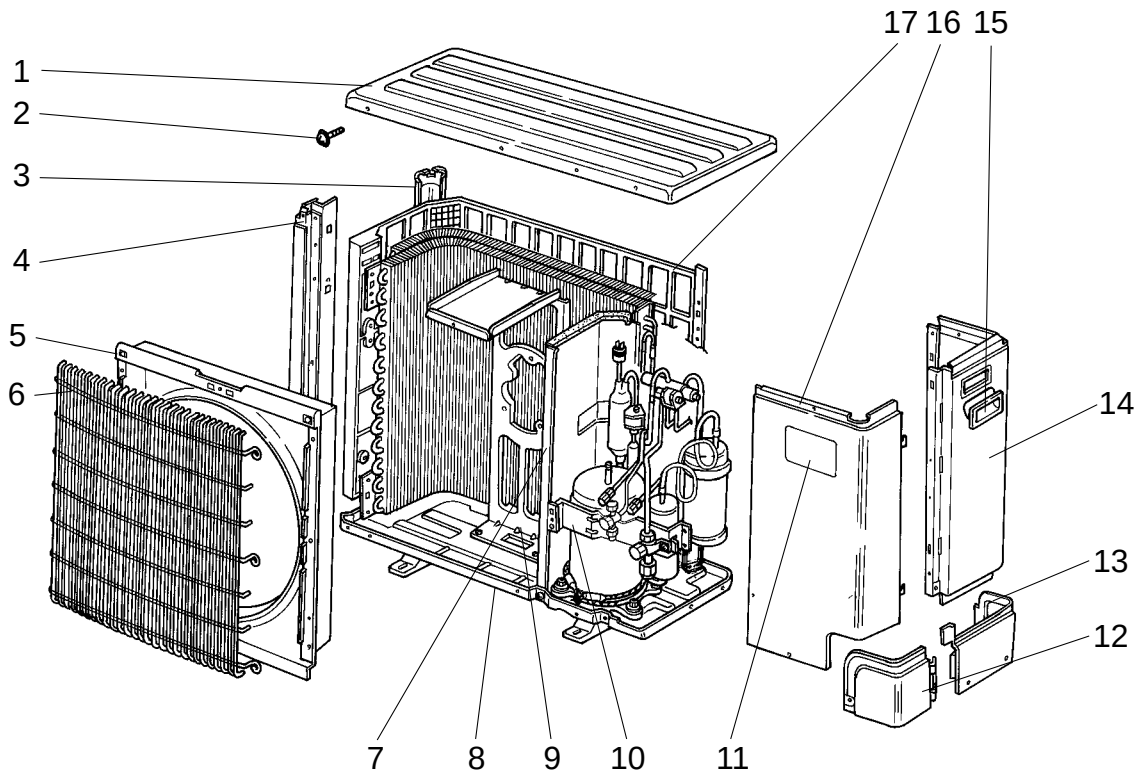




OPERATING PROCEDURE	PHOTOS
12. Removing the compressor (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove the electrical parts box. (See Photo 3) (4) Remove the bell mouth. (See Photo 8) (5) Remove the 3 valve bed fixing screws (4 X 10) and the 4 ball valve fixing screws(5 X 16) to remove the valve bed. (6) Remove the 3 rear panel fixing screws (5 X 15) to the panel. (7) Remove the cover panel fixing screw (5 X 15) to remove the front side of cover panel. (8) Remove the 3 points of the compressor fixing nut with a monkey wrench. (9) Remove the brazed pipe of compressor intake and outlet to remove the compressor <Reference> * When the power supply terminal block of the compressor is fixed with the screws, the tightening torque is from 1.4 to 1.7 N.m.	Photo 9  Accumulator Compressor Compressor fixing nuts
13. Removing the accumulator. (1) Remove the compressor or remove the rear panel. (2) Remove the brazed pipe of accumulator intake and outlet to remove the accumulator	

STRUCTURAL PARTS

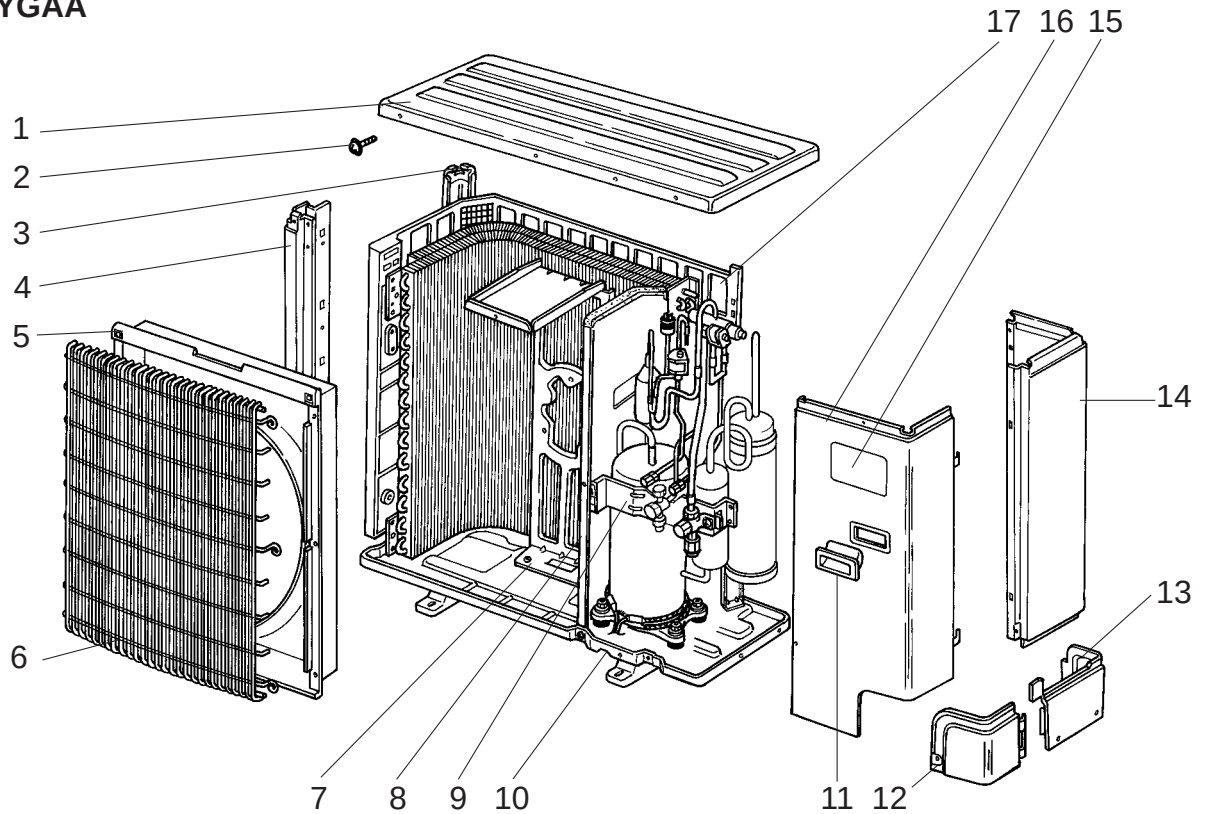
PUH-P1.6VGAA



No.	Part No.	Part Name	Specification	Q'ty/set	Remarks (Drawing No.)	Wiring Diagram Symbol	Recom- mended Q'ty	Price	
				PUH -P				Unit	Amount
				1.6VGAA					
1	R01 30L 641	TOP PANEL		1					
2	—	F.S.T SCREW	5X15	16	(DG12F536H15)				
3	R01 30L 613	REAR SUPPORT		1					
4	R01 23T 614	FRONT SUPPORT		1					
5	R01 30L 119	BELL MOUTH		1					
6	R01 30L 675	FAN GUARD		1					
7	—	SEPARATOR ASSY		1	(BG00R292GE1)				
8	T7W E08 686	BASE		1					
9	T7W E01 130	MOTOR SUPPORT		1					
10	—	VALVE BED ASSY		1	(BG00R291G52)				
11	—	LABEL (MITSUBISHI)		1	(DG79R130H01)				
12	R01 31L 658	COVER PANEL-1		1					
13	R01 30L 658	COVER PANEL-2		1					
14	T7W E05 682	REAR PANEL		1					
15	R01 30L 655	PANEL HANDLE		1					
16	T7W E08 661	SERVICE PANEL		1					
17	R01 30L 698	REAR GUARD		1					

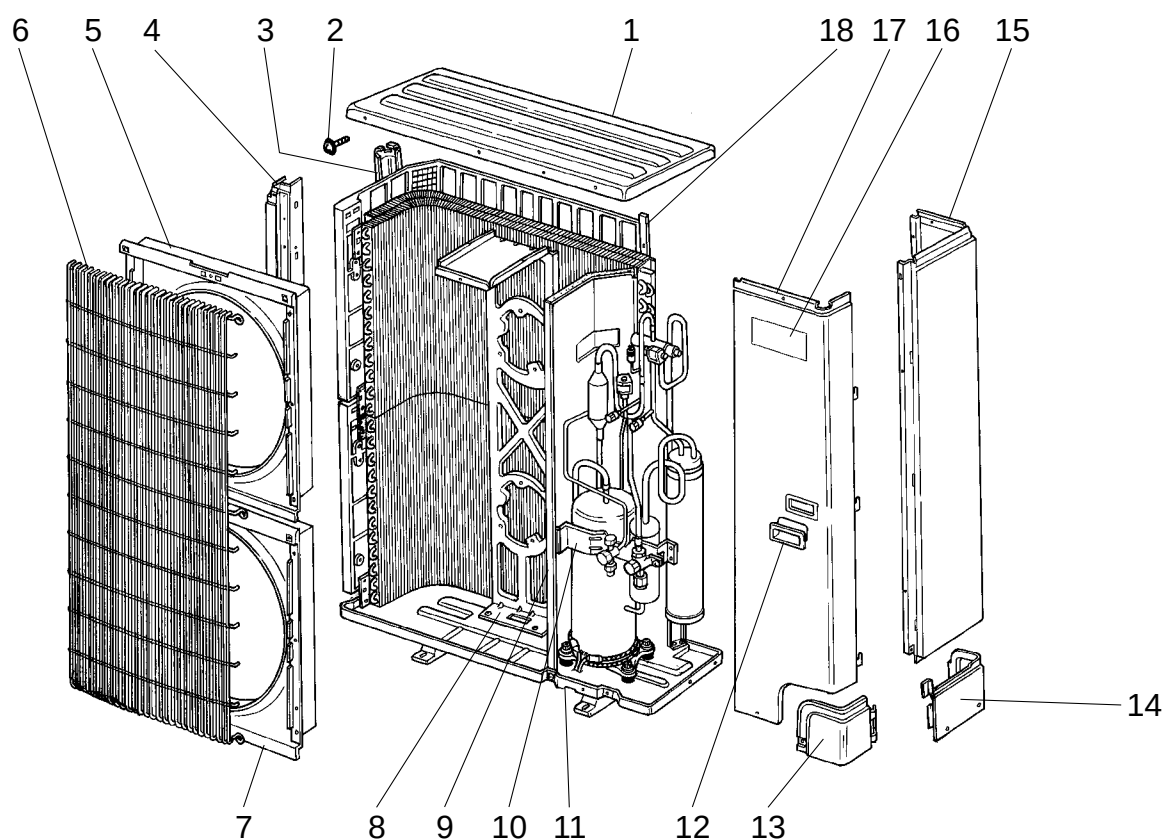
STRUCTURAL PARTS

PUH-P2VGAA
PUH-P2.5VGAA
PUH-P3VGAA
PUH-P3YGAA



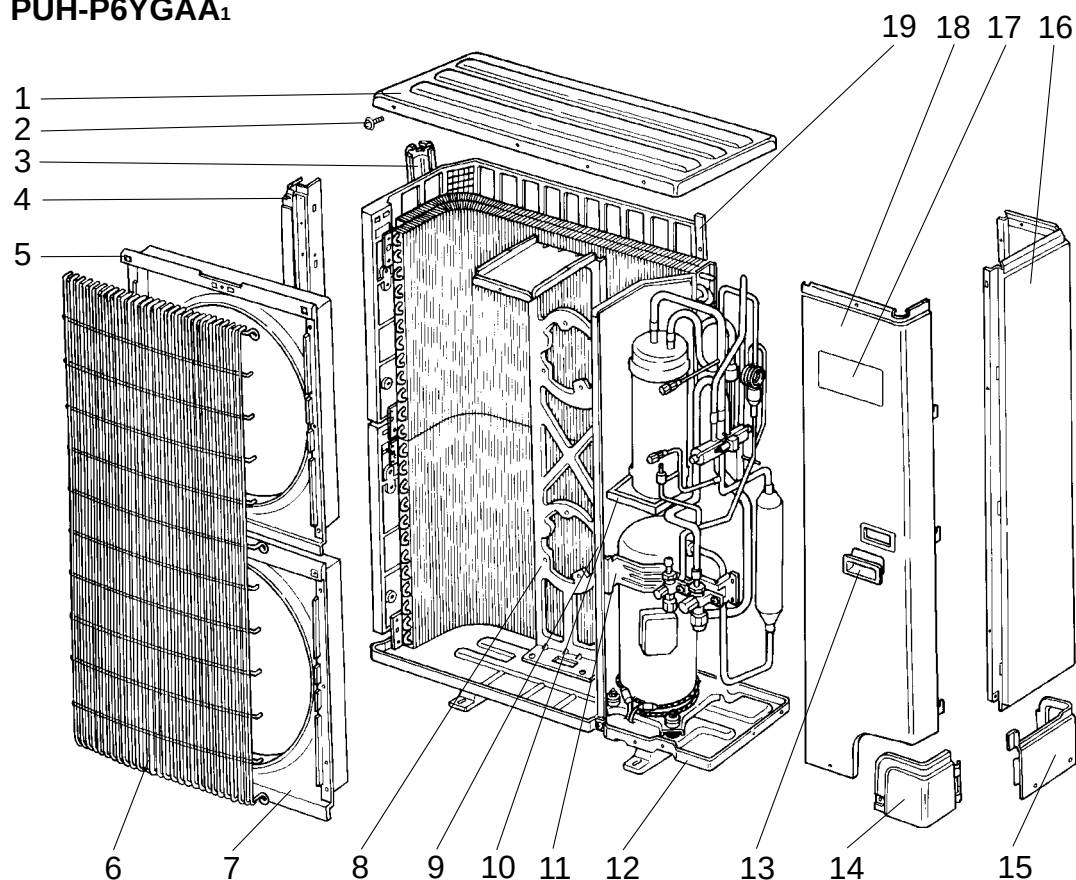
No.	Part No.	Part Name	Specificatio	Q'ty/set			Remarks (Drawing No.)	Wining Diagram Symbol	Recom- mended Q'ty	Price	
				PUH-P						Unit	Amount
				2	2.5	3					
				VGAA		VGAA YGAA					
1	R01 30L 641	TOP PANEL		1	1	1					
2	—	F.ST SCREW	5X15	16	16	16	(DG12F536H15)				
3	R01 36L 613	REAR SUPPORT		1	1	1					
4	T7W E00 614	FRONT SUPPORT		1	1	1					
5	R01 36L 119	BELL MOUTH		1	1	1					
6	R01 36L 675	FAN GUARD		1	1	1					
7	R01 37L 130	MOTOR SUPPORT		1	1	1					
8	—	SEPARATOR ASSY		1	1		(BG00R292GE4)				
	—	SEPARATOR ASSY				1	(BG00R292GE3)				
9	—	VALVE BED ASSY		1	1	1	(BG00R291G52)				
10	T7W E07 686	BASE		1	1	1					
11	R01 30L 655	PANEL HANDLE		2	2	2					
12	R01 31L 658	COVER PANEL-1		1	1	1					
13	R01 30L 658	COVER PANEL-2		1	1	1					
14	T7W E06 682	REAR PANEL		1	1						
	T7W E07 682	REAR PANEL				1					
15	—	LABEL (MITSUBISHI)		1	1	1	(DG79R130H01)				
16	T7W E09 661	SERVISE PANEL		1	1	1					
17	T7W E05 698	REAR GUARD		1	1	1					

STRUCTURAL PARTS PUH-P4YGAA



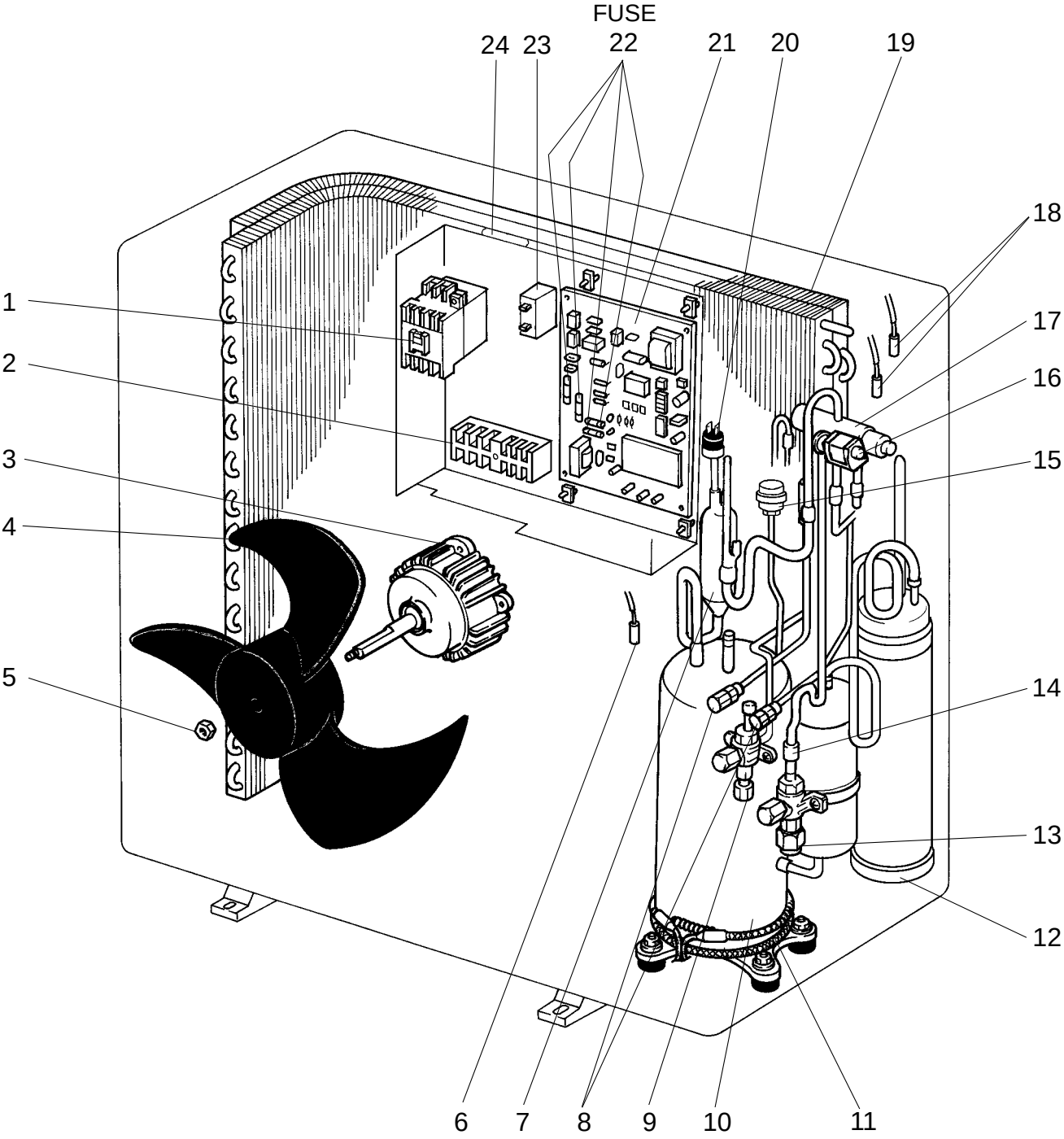
No.	Part No.	Part Name	Specification	Q'ty/set	Remarks (Drawing No.)	Wiring Diagram Symbol	Recom- mended Q'ty	Price	
				PUH-P 4YGAA				Unit	Amount
1	R01 30L 641	TOP PANEL		1					
2	—	F.ST SCREW	5X15	18	(DG12F536H15)				
3	R01 41L 613	REAR SUPPORT		1					
4	T7W E01 614	FRONT SUPPORT		1					
5	R01 41L 119	BELL MOUTH		1					
6	R01 41L 675	FAN GUARD		1					
7	R01 30L 119	BELL MOUTH		1					
8	R01 42L 130	MOTOR SUPPORT		1					
9	—	SEPARATOR ASSY		1	(BG00R292GC6)				
10	—	VALVE BED ASSY		1	(BG00R291G52)				
11	T7W E10 686	BASE		1					
12	R01 30L 655	PANEL HANDLE		2					
13	R01 31L 658	COVER PANEL-1		1					
14	R01 30L 658	COVER PANEL-2		1					
15	T7W E04 682	REAR PANEL		1					
16	—	LABEL (MITSUBISHI)		1	(DG79R130H01)				
17	T7W E10 661	SERVICE PANEL		1					
18	R01 30L 698	REAR GUARD		2					

STRUCTURAL PARTS
PUH-P5YGAA PUH-P6YGAA
PUH-P5YGAA₁ PUH-P6YGAA₁



No.	Part No.			Part Name	Specification	Q'ty/set	Remarks (Drawing No.)	Wining Diagram Symbol	Recom- mended Q'ty	Price	
						PUH-P				Unit	Amount
						5YGAA 5YGAA ₁					
1	R01	17T	641	TOP PANEL		1					
2	—			F.ST SCREW	5X15	18	(DG12F536H15)				
3	R01	41L	613	REAR SUPPORT		1					
4	R01	17T	614	FRONT SUPPORT		1					
5	R01	41L	119	BELL MOUTH		1					
6	R01	41L	675	FAN GUARD		1					
7	R01	30L	119	BELL MOUTH		1					
8	R01	42L	130	MOTOR SUPPORT		1					
9	—			SEPARATOR ASSY		1	(BG00R292GC5)				
10	—			ACCUMULATOR DRAIN PAN		1	(BG25T416H06)				
11	—			VALVE BED ASSY		1	(BG00R291G53)				
12	T7W	E11	686	BASE		1					
13	R01	30L	655	PANEL HANDLE		2					
14	R01	31L	658	COVER PANEL-1		1					
15	R01	30L	658	COVER PANEL-2		1					
16	T7W	E04	682	REAR PANEL		1					
17	—			LABEL(MITSUBISHI)		1	(DG79R130H01)				
18	T7W	E11	661	SERVICE PANEL		1					
19	R01	17T	698	REAR GUARD		2					

FUNCTIONAL PARTS
PUH-P1.6VGAA

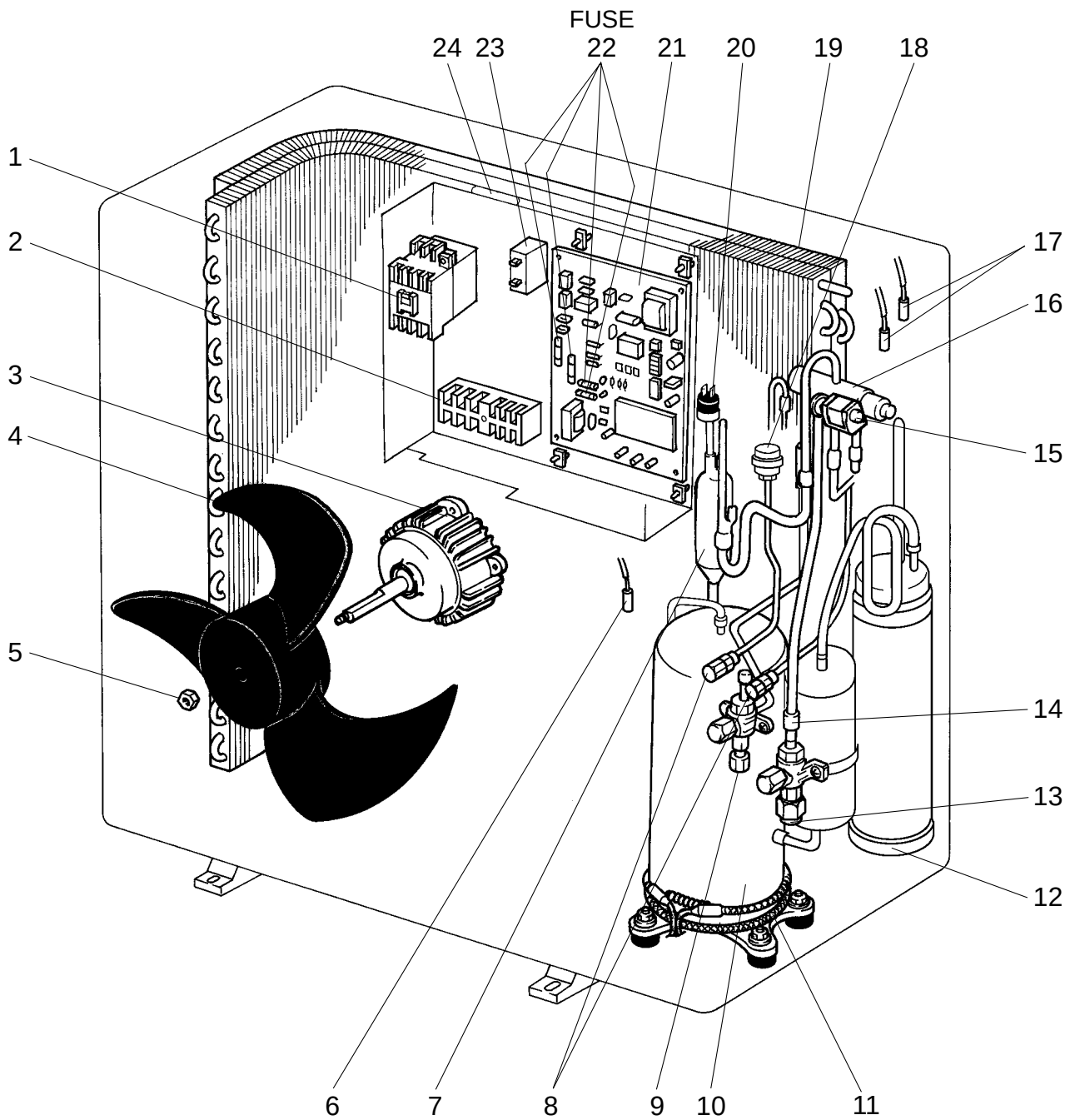


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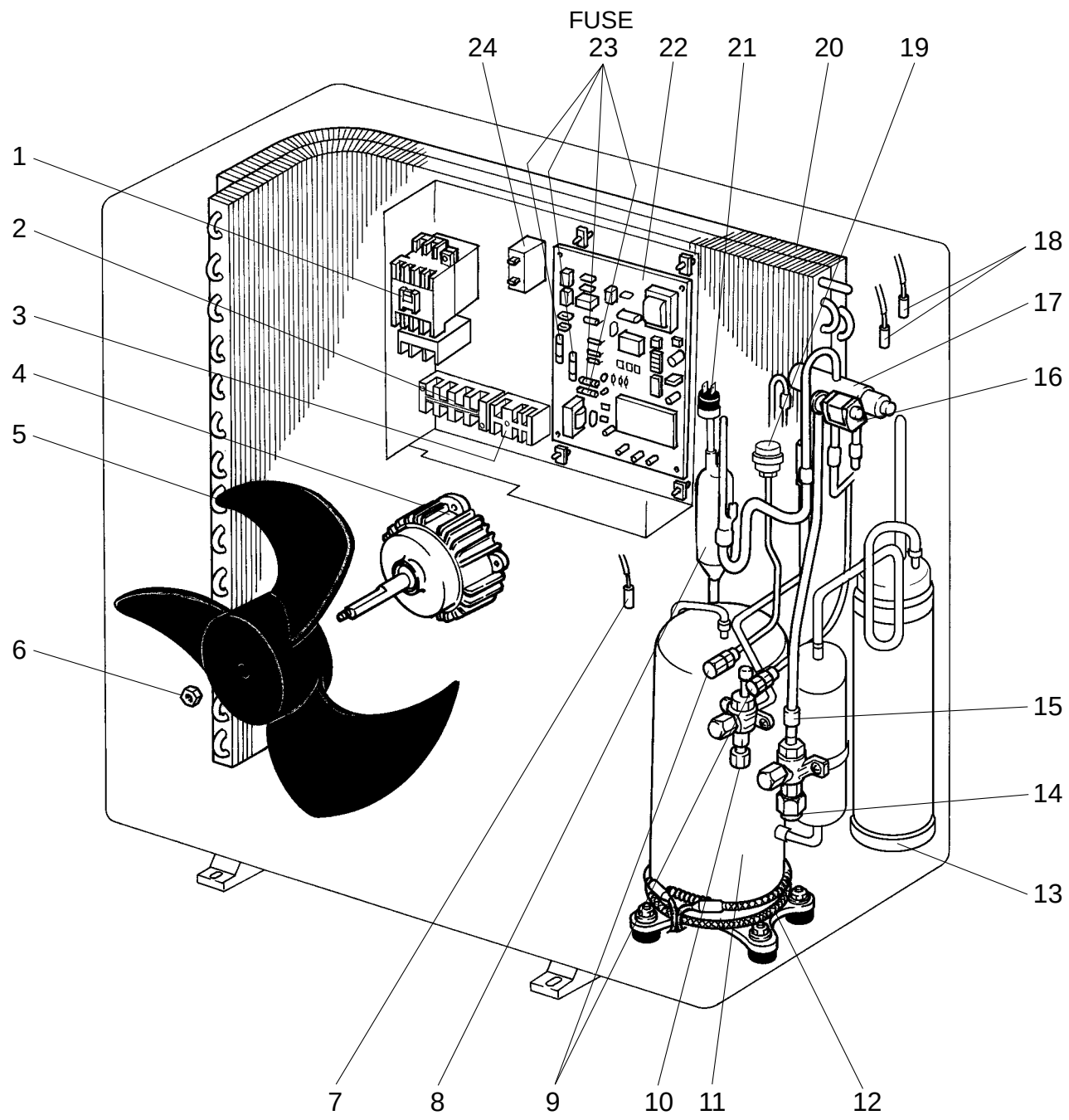
No.	Part No.	Part Name	Specification	Q'ty/set	Remarks	Wiring Diagram Symbol	Recommended Q'ty	Price	
				PUH-P				Unit	Amount
				1.6					
				VGAA					
1	T7W 249 708	MC CONTACTOR	S-U12 230V	1		52C			
2	T7W E03 716	TERMINAL BLOCK	5P(L,N,S1,S2,S3)	1		TB1			
3	T7W E22 763	OUTDOOR FAN MOTOR	PA6V70-UGE	1		MF			
4	R01 30L 115	PROPELLER		1					
5	R01 30L 097	NUT	M8	1					
6	T7W E01 201	THERMISTOR (DISCHARGE)		1		TH4			
7	R01 E03 467	MUFFLER		1					
8	R01 E01 413	CHARGE PLUG		2					
9	T7W E02 410	STOP VALVE(LIQUID)	3/8"	1					
10	T97 661 610	COMPRESSOR	RE277VHSM	1		MC			
11	T7W E05 236	CRANKCASE HEATER	240V 30W	1		CH			
12	R01 E00 440	ACCUMULATOR		1					
13	T7W E03 411	BALL VALVE	5/8"	1					
14	R01 30L 450	STRAINER	#50-9.52	1					
15	T7W E03 401	LINEAR EXPANSION VALVE		1		LEV			
16	T7W A01 242	4-WAY VALVE SOLENOID COIL		1		21S4			
17	T7W 270 403	4-WAY VALVE		1					
18	R01 E37 202	THERMISTOR (LIQUID , CONDENSER / EVAPORATOR)		1		TH3, TH6			
19	T7W E15 408	HEAT EXCHANGER		1					
20	T7W E00 208	HIGH PRESSURE PROTECT SWITCH	OFF:3.3MPa ON:2.6MPa	1		63H			
21	T7W E12 315	OUTDOOR CONTROLLER BOARD		1		O.B			
22	T7W 520 239	FUSE	250V 6.3A	4		FUSE			
23	R01 30L 255	MF CAPACITOR	3 μ F $\times$ 440V	1		C3			
24	T7W E00 723	CM CAPACITOR	40 μ F $\times$ 400V	1		C5			



FUNCTIONAL PARTS
PUH-P2VGAA
PUH-P2.5VGAA
PUH-P3VGAA



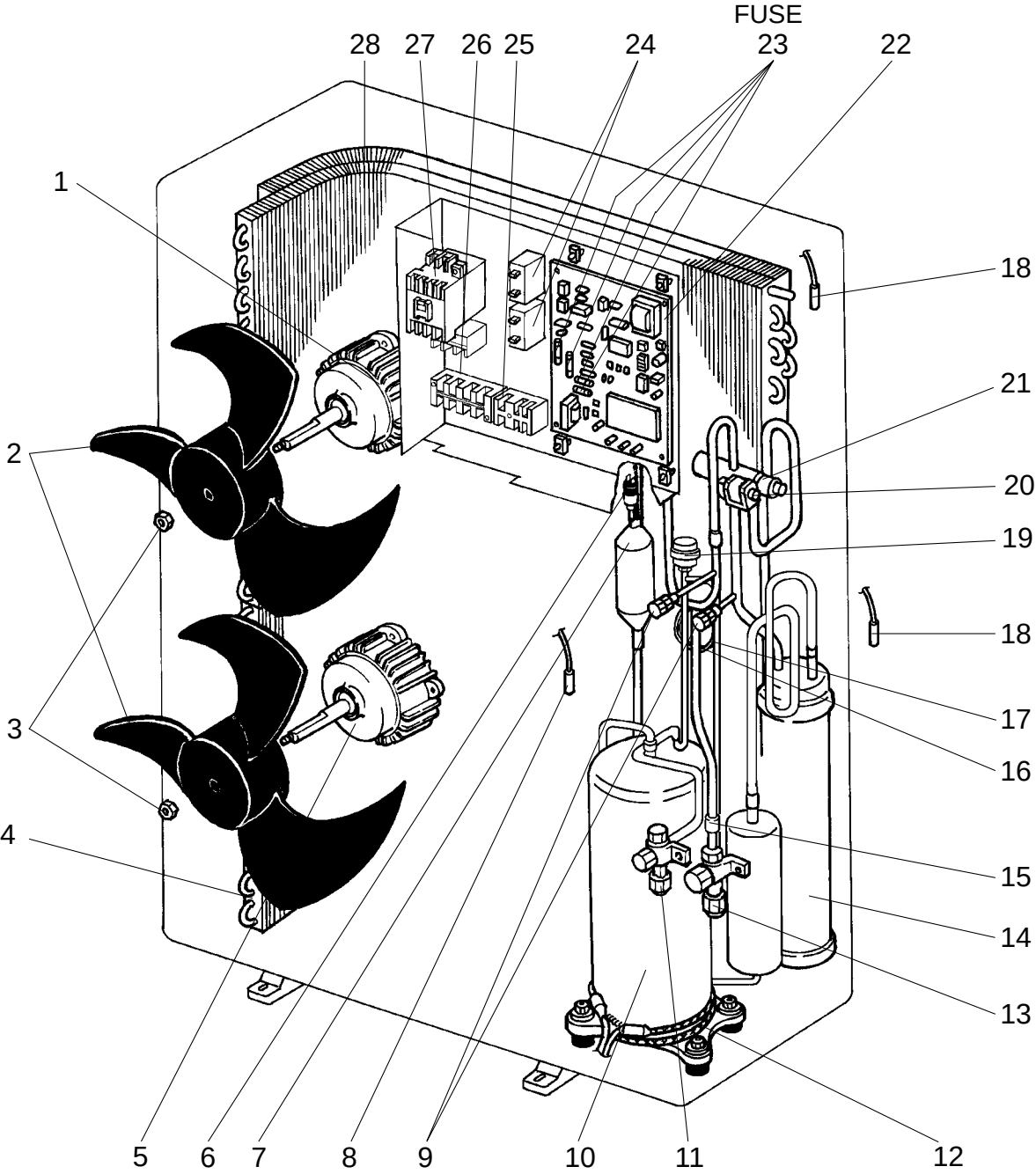
FUNCTIONAL PARTS
PUH-P3YGAA



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No.	Part No.	Part Name	Specification	Q'ty/set	Remarks	Wining Diagram Symbol	Recom- mended Q'ty	Price	
				PUH-P				Unit	Amount
				3					
				YGAA					
1	T7W E01 708	MC CONTACTOR	MSO-N11	1		51C,52C			
2	T7W E04 716	TERMINAL BLOCK	4P(L1,L2,L3,N)	1		TB1			
3	R01 17J 246	TERMINAL BLOCK	3P(S1,S2,S3)	1		TB2			
4	T7W E22 763	OUTDOOR FAN MOTOR	PA6V70-UGE	1		MF			
5	R01 30L 115	PROPELLER		1					
6	R01 30L 097	NUT	M8	1					
7	T7W E01 201	THERMISTOR (DISCHARGE)		1		TH4			
8	T7W E03 467	MUFFLER		1					
9	R01 E01 413	CHARGE PLUG		2					
10	R01 E00 410	STOP VALVE (LIQUID)	3/8"	1					
11	T97 511 310	COMPRESSOR	NE52YDKMT	1		MC			
12	T7W E06 236	CRANKCASE HEATER	240V 38W	1		CH			
13	T7W E03 440	ACCUMULATOR		1					
14	R01 E01 411	BALL VALVE	5/8"	1					
15	R01 36L 450	STRAINER	#50-60	1					
16	T7W A01 242	4-WAY VALVE SOLENOID COIL		1		21S4			
17	T7W 143 403	4-WAY VALVE		1					
18	R01 E37 202	THERMISTOR(LIQUID , CONDENSER / EVAPORATOR)		1		TH3, TH6			
19	T7W E05 401	LINEAR EXPANSION VALVE		1		LEV			
20	T7W E18 408	HEAT EXCHANGER		1					
21	T7W E00 208	HIGH PRESSURE PROTECT SWITCH	OFF:3.3MPa ON:2.6MPa	1		63H			
22	T7W E13 315	OUTDOOR CONTROLLER BOARD		1		O.B			
23	T7W 520 239	FUSE	250V 6.3A	4		FUSE			
24	R01 30L 255	MF CAPACITOR	3 μ F X 440V	1		C3			

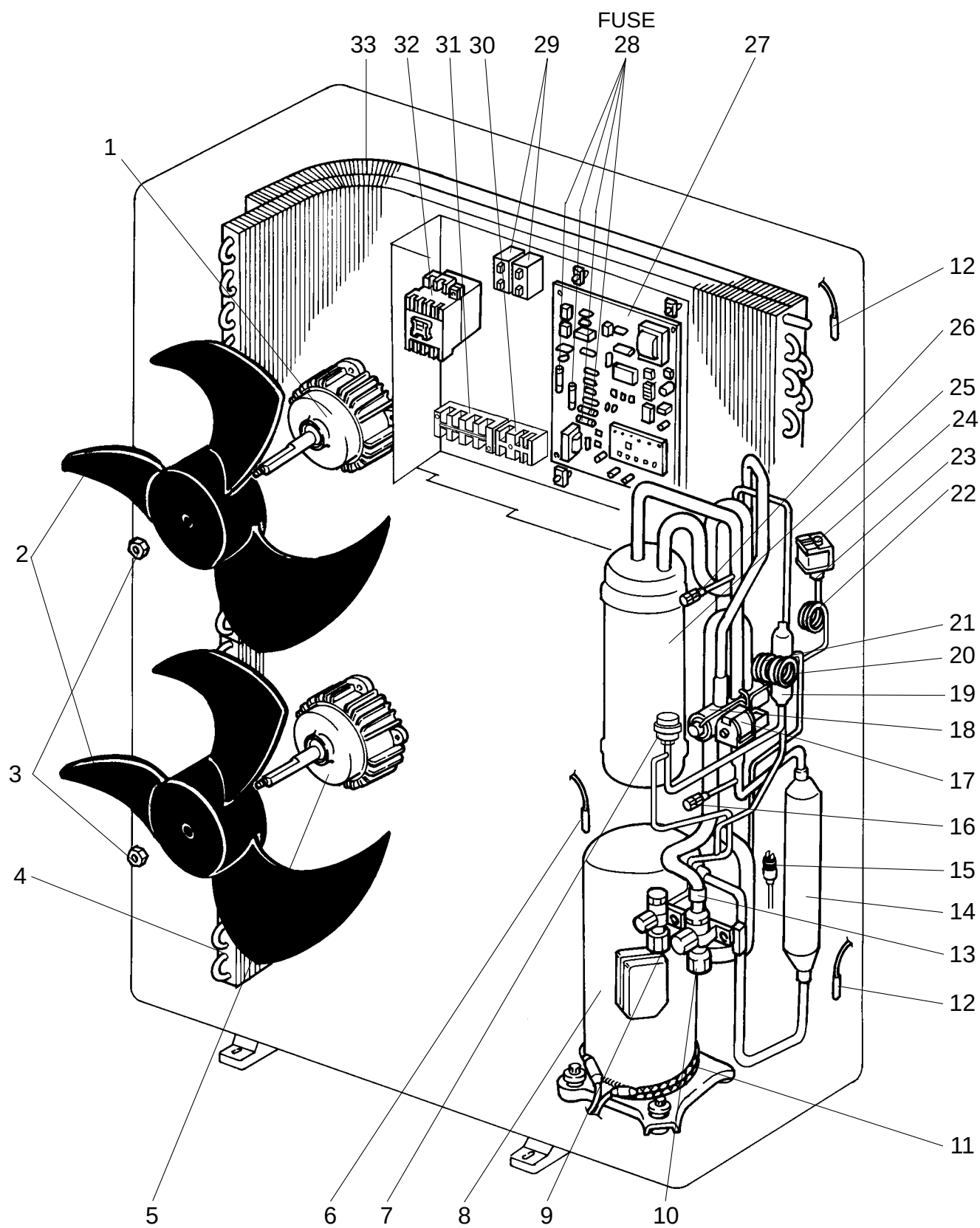
FUNCTIONAL PARTS
PUH-P4YGAA



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No.	Part No.	Part Name	Specification	Q'ty/set	Remarks	Wining Diagram Symbol	Recom- mended Q'ty	Price	
				PUH-P				Unit	Amount
				4					
				YGAA					
1	T7W E22 763	OUTDOOR FAN MOTOR	PA6V70-UGE	1		MF			
2	R01 30L 115	PROPELLER		2					
3	R01 30L 097	NUT	M8	2					
4	T7W E19 409	HEAT EXCHANGER (UNDER)		1					
5	T7W E23 763	OUTDOOR FAN MOTOR	PA6V70-UGF	1		MF			
6	T7W E00 208	HIGH PRESSURE PROTECT SWITCH	OFF:3.3MPa ON:2.6MPa	1		63H			
7	R01 E05 467	MUFFLER		1					
8	R01 E00 201	THERMISTOR (DISCHARGE)		1		TH4			
9	R01 E01 413	CHARGE PLUG		2					
10	T97 512 310	COMPRESSOR	NE56YDKMT	1		MC			
11	R01 E00 410	STOP VALVE(LIQUID)	3/8"	1					
12	T7W E07 236	CRANKCASE HEATER	240V 38W	1		CH			
13	R01 E00 411	BALL VALVE	3/4"	1					
14	T7W E09 440	ACCUMULATOR		1					
15	R01 42L 450	STRAINER	#50-19.1	1					
16	R01 37A 425	CAPILLARY TUBE	φ4.0 X φ3.0 X 350mm	1					
17	T7W E02 425	CAPILLARY TUBE	φ4.0 X φ3.0 X 350mm	1					
18	R01 E36 202	THERMISTOR(LIQUID , CONDENSER / EVAPORATOR)		1		TH3, TH6			
19	R01 E01 401	LINEAR EXPANSION VALVE		1		LEV			
20	T7W 260 242	4-WAY VALVE SOLENOID COIL		1		21S4			
21	R01 92T 403	4-WAY VALVE		1					
22	T7W E13 315	OUTDOOR CONTROLLER BOARD		1		O.B			
23	T7W 520 239	FUSE	250V 6.3A	4		FUSE			
24	R01 30L 255	MF CAPACITOR	3μF X 440V	2		C3, C4			
25	R01 17J 246	TERMINAL BLOCK	3P(S1,S2,S3)	1		TB2			
26	T7W E04 716	TERMINAL BLOCK	4P(L1,L2,L3,N)	1		TB1			
27	T7W E01 708	MC CONTACTOR	MSO-N11	1		51C, 52C			
28	T7W E19 408	HEAT EXCHANGER		1					

FUNCTIONAL PARTS
PUH-P5YGAA PUH-P6YGAA
PUH-P5YGAA₁ PUH-P6YGAA₁



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No.	Part No.			Part Name	Specification	Q'ty/set				Remarks	Wining Diagram Symbol	Recom- mended Q'ty	Price	
						PUH-P							Unit	Amount
						5	6	5	6					
						YGAA		YGAA ₁						
1	T7W	E24	763	OUTDOOR FAN MOTOR	PA6V75-UGC	1	1	1	1		MF			
2	R01	30L	115	PROPELLER		2	2	2	2					
3	R01	30L	097	NUT	M8	2	2	2	2					
4	T7W	E20	409	HEAT EXCHANGER (UNDER)		1	1	1	1					
5	T7W	E25	763	OUTDOOR FAN MOTOR	PA6V75-UGD	1	1	1	1		MF			
6	R01	E00	201	THERMISTOR (DISCHARGE)		1	1	1	1		TH4			
7	R01	E11	401	LINEAR EXPANSION VALVE		1	1	1	1		LEV			
8	T97	510	510	COMPRESSOR	ZR61KCE-TFD-230 Including RUBBER MOUNT	1		1			MC			
	T97	530	503	COMPRESSOR	ZR72KCE-TFD-230 Including RUBBER MOUNT		1		1		MC			
9	R01	E00	410	STOP VALVE(LIQUID)	3/8"	1	1	1	1					
10	R01	E00	411	BALL VALVE	3/4"	1	1	1	1					
11	T7W	E08	236	CRANKCASE HEATER	240V 38W	1	1	1	1		CH			
12	R01	E36	202	THERMISTOR (LIQUID , CONDENSER / EVAPORATOR)		1	1	1	1		TH3, TH6			
13	R01	42L	450	STRAINER	#50-19.1	1	1	1	1					
14	R01	E05	467	MUFFLER		1	1	1	1					
15	T7W	E00	208	HIGH PRESSURE SWITCH	OFF:3.3MPa ON:2.6MPa	1	1	1	1		63H			
16	R01	E01	413	CHARGE PLUG		1	1	1	1					
17	T7W	A01	242	4-WAY VALVE SOLENOID COIL		1	1	1	1		21S4			
18	R01	93T	403	4-WAY VALVE		1	1							
	R01	E06	403	4-WAY VALVE				1	1					
19	R01	E00	405	FILTER DRYER		1	1	1	1					
20	R01	38A	425	CAPILLARY TUBE	φ4.0 X φ3.0 X 200mm	1	1	1	1					
21	R01	E13	425	CAPILLARY TUBE	φ4.0 X φ3.0 X 200mm	1	1	1	1					
22	T7W	E19	425	CAPILLARY TUBE	φ4.0 X φ2.0 X 400mm			1						
	T7W	E20	425	CAPILLARY TUBE	φ4.0 X φ3.0 X 450mm				1					
23	R01	E03	428	BYPASS BALVE				1	1					
24	T7W	E00	242	BYPASS BALVE SOLENOID COIL				1	1		SV			
25	R01	17T	440	ACCUMULATOR		1	1	1	1					
26	R01	29W	413	CHARGE PLUG		1	1	1	1					
27	T7W	E13	315	OUTDOOR CONTROLLER BOARD		1	1	1	1		O.B			
28	T7W	520	239	FUSE	250V 6.3A	4	4	4	4		FUSE			
29	R01	17T	255	FAN MOTOR CAPACITOR	3.5μF X 440V	2	2	2	2		C3, C4			
30	R01	17J	246	TERMINAL BLOCK	3P(S1,S2,S3)	1	1	1	1		TB2			
31	T7W	E04	716	TERMINAL BLOCK	4P(L1,L2,L3,N)	1	1	1	1		TB1			
32	T7W	E02	708	CONTACTOR	MSO-N20	1	1	1	1		51C, 52C			
33	T7W	E20	408	HEAT EXCHANGER		1	1	1	1					

14-1. DRAIN SOCKET

Part No.	PAC-SF37DS-E
Applied models	PUH-P1.6, 2, 2.5, 3VGAA PUH-P3, 4, 5, 6YGAA

14-2. AIR OUTLET GUIDE

Part No.	PAC-SF08SG-E
Applied models	PUH-P1.6, 2, 2.5, 3VGAA PUH-P3, 4, 5, 6YGAA

※ PUH-P4, P5, P6YGAA needs two piece.

14-3. DRAIN PAN

Part No.	PAC-SF16DP-E	PAC-SF17DP-E
Applied models	PUH-P1.6, 2, 2.5, 3VGAA PUH-P3, 4YGAA	PUH-P5,6YGAA

14-4. A / M-NET ADAPTER

Part No.	PAC-SF48MA-E
Applied models	PUH-P1.6, 2, 2.5, 3VGAA PUH-P3, 4, 5, 6YGAA